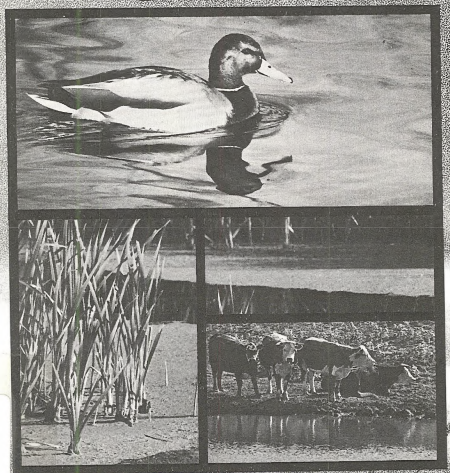
Grass Creek Resource Area

Reservoir Habitat Management Plan



Wyoming Game and Fish Department
Cody, Wyoming

Bureau of Land Management
Worland, Wyoming

Grass Creek Resource Area

Reservoir Habitat Management Plan

Number Wl-WHA-A15 Effective Date _____

Location: Grass Creek Resource Area, Worland District in Hot Springs, Washakie, Bighorn and Park Counties, Wyoming

Prepared By: Richard Kroger — Fishery Biologist, Worland District BLM

Jeffrey Denton — Wildlife Biologist, Worland District BLM

Approved By: _____ 5/11/83
State Director, Bureau of Land Management — Date

_____ 5/13/83
State Director, Wyoming Game and Fish Department — Date

ABSTRACT

The Grass Creek Resource Area Reservoir Habitat Management Plan was cooperatively developed by the Wyoming Game and Fish Department and Bureau of Land Management. Projects will be implemented over a 20 year period at a cost of about $400,000. Maintenance of projects will be continuous.

Objectives of the Plan are to increase duck and goose production, create additional fish habitat, and improve habitat for all wildlife species that utilize reservoir sites. Achievement of the objectives will be attained by modifying existing stock-water and irrigation reservoirs, changing the design of new ones, and constructing new reservoirs specifically to increase fish and waterfowl habitat.

Actions are planned for improvement and creation of nesting and rearing habitat for species such as mallard, teal, and Canada geese. Improvement of production habitat for these priority waterfowl species will be achieved through planting of cover and food plants, construction of nesting islands and structures, control of livestock, and maintenance of better water conditions. Habitat improvement for other wildlife will also be achieved by these actions and through special planting of trees and shrubs.

Planned actions for achieving fisheries objectives are mainly directed toward improvement of the Wardell Reservoir which is an existing irrigation reservoir on public land. It presently supports a walleye fishery. This site is proposed for improvement through fencing, improvement of water levels, planting of trees and shrubs, and possibly creation of user facilities. Most existing and proposed stock-watering reservoirs lack sufficient depth and adequate water quality for support of fish. As a result, modification or construction of three reservoirs specifically for support of fish is proposed. The sites will be selected to ensure establishment of adequate fish habitat and to maximize fishing use of them. Primary species to be managed will be selected by Wyoming Game and Fish Department but could include rainbow trout, largemouth bass, walleye, channel catfish, black bullhead, warm water pan fish, and non-game forage fish. Actual selection of management species will depend on public demand and availability of fish for introduction.

Maintenance and improvement of existing reservoirs for livestock watering remain the prime considerations in all project proposals. Wherever a reservoir is to be fenced to allow development of desirable waterfowl production habitat or fishing opportunities, provisions will be made to supply needed water for livestock watering at the site. Life expectancy of protected sites will increase and frequency of repairs be reduced as a result of improved watershed conditions (reduced soil compaction and increased vegetation), increased capture of silt by upstream reservoir vegetation, and protection of dams with bands of vegetation. From a livestock husbandry standpoint, water quality will be improved through reduction of suspended sediments and water-borne pollutants. Livestock also will benefit from increased production of vegetation on protected reservoir sites which can be periodically grazed at proper levels without degrading fish and wildlife habitat. In essence, condition of reservoirs will improve for all wild and domestic species that utilize these wetland ecosystems. At the same time watershed conditions also will improve at and downstream from reservoir sites.

FORWARD

WATERFOWL

Maintenance of the nation's migratory waterfowl resource has been actively pursued in the United States for over a half century. Millions of dollars raised through sale of federal migratory bird hunting and conservation stamps have been spent to purchase waterfowl production areas threatened by drainage in the prairie pothole region of the country. Additional millions contributed by waterfowl enthusiasts have been spent in Canada by Ducks Unlimited, Inc. to maintain production areas. Despite these efforts, waterfowl production areas still continue to be lost at an alarming rate in the pothole region of North America.

Duck and goose production has increased significantly in arid areas of the West following construction of thousands of stock-water reservoirs on private and public land. Production of waterfowl on individual reservoirs is dependent on maintenance of adequate water levels and quality and growth of desirable vegetation in and around the water for nesting and rearing purposes. As a result of these habitat requirements, many reservoirs do not produce waterfowl because of insufficient water or lack of vegetation to meet nesting and rearing habitat requirements. Many reservoirs can be modified to improve waterfowl production through changes in management practices that encourage growth of vegetation necessary to meet nesting and rearing needs. This type of reservoir management is consistant with Bureau of Land Management (BLM) wetland management policies and the Wyoming Game and Fish Department (WG&FD) efforts for attaining waterfowl goals, as stated in their Strategic Plan. Increasing waterfowl production on public land reservoirs helps to counteract losses resulting from habitat destruction elsewhere in the United States.

FISH

The WG&FD Strategic Plan for sport fisheries calls for aquatic habitat development. It proposes that Department personnel work with BLM to protect aquatic habitat on public land. Bureau policy requires that feasible fisheries opportunities be incorporated into reservoir construction and maintenance projects.

No existing stock-watering reservoirs are known to contain good fish habitat in the Resource Area, and it is doubtful that many future ones will either. One irrigation reservoir on public land supports a sport fishery managed by WG&FD. Natural limitations such as quantity of water, rapid siltation, and high turbidity usually prevent creation of suitable fishery habitat at most sites selected for construction of livestock water reservoirs. Total lack of fish habitat in stock reservoirs probably has resulted because no effort has been expended to modify structural designs to assure creation of suitable habitat.

Improvement or even construction of reservoirs primarily for creation of fish habitat offers the best opportunity for increasing pond fishing on public lands. Maximum fishing use is attained when reservoirs are constructed near population centers and/or when public access is provided to highly accessible areas. These locations encourage intensive fishing because of the minimal time and expense necessary to make a trip. Presently people routinely travel from Worland to Sunshine Reservoir, a 120 mile round trip drive. Fishing use is increased further through modification or construction of reservoirs for support of warm, as well as cold water, species, thus providing variety in the fishing experience.

Establishment of reproducing populations of non-game fish in suitable reservoirs creates an additional food source for game fish, as well as other wildlife. Wading birds, fur bearers, and certain waterfowl are the major beneficiaries of establishment of fish populations as a food source in stock watering reservoirs.

OTHER WILDLIFE

Nearly all wildlife species occupying arid areas of the West benefit from presence of well maintained reservoirs. These include such groups as game birds, shore birds, wading birds, raptors, perching birds, game animals, nongame animals, predators, amphibians and reptiles. The distribution of numerous terrestrial game and non-game species has been expanded to historical range or beyond as a result of stock-watering reservoir proliferation in areas lacking other watering sources. Other species have benefited from the increase in prey species associated with reservoirs. Construction of reservoirs can be used specifically to establish terrestrial game species such as antelope and mule deer in areas lacking populations because of water scarcity. The potential exists on most reservoirs to increase wildlife diversity by creating vertical structural diversity through propagation of shrub, tree, and forb species.

WATERSHED

The proposed projects, when implemented, will help reach watershed and water quality goals by reducing sediment delivery to perennial streams. Sediment reduction is an important goal for both BLM and the State of Wyoming and is highlighted in the Big Horn Basin 208 Water Quality Management Plan. In summary, implementation of the Bureau's ecosystem management policy on reservoirs ensures that habitat will not only be improved for managed species and also for most others which use these sites, but that watershed conditions will be improved.

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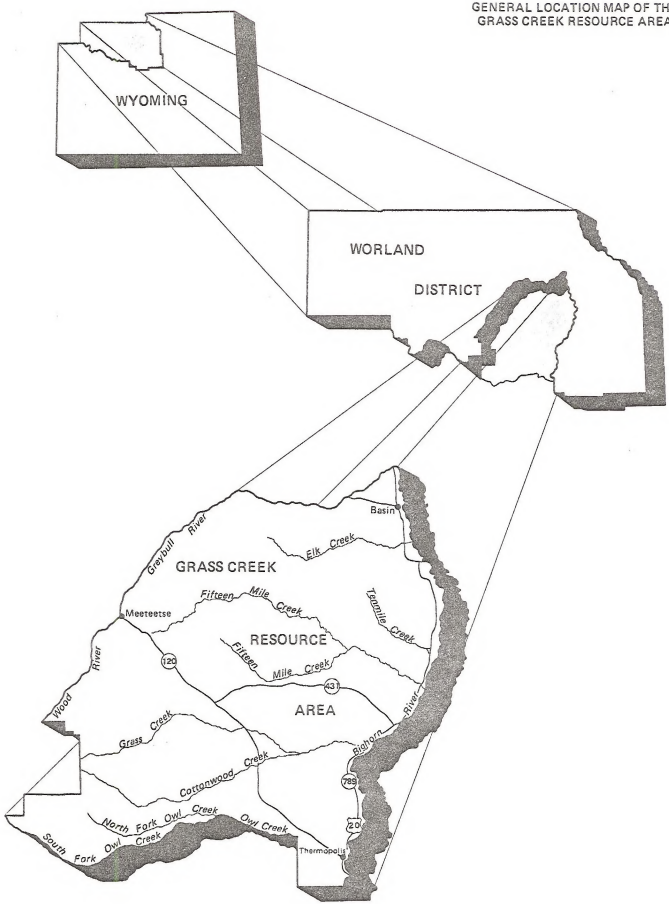


Form 6780-1
(July 1981)
(formerly 6620-1)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CHECKLIST FOR PREPARATION AND REVIEW OF HABITAT MANAGEMENT PLANS

State: Wyoming

District: Worland

Resource Area: Grass Creek

HMP Name and Number: WI-WHA-A15 GCRA Reservoir HMP

HMP Prepared by: R. Kroger/J. Denton

REVIEW CHECKLIST	SURNAME	DATE
1. Master Memorandum of Understanding, Sikes Act Agreement and/or Supplemental with State Agency.		MOU 8-19-76 Suppl: 11-17-82
2. Preliminary meeting(s) with State Agency *(or other appropriate cooperators)* to jointly discuss HMP objectives.		February 24, 1982
3. Endangered Species Act Compliance completed by	Richard L. Kroger	Sept. 13, 1982
4. Review by District/Resource Area Specialists	[illegible] Coffey Greg [illegible]	4/19/83 4/19/83
Range	[illegible]	April 19, 1983
Wild Horse and Burro	Wm [illegible]	April 19, 1983
Hydrologist	Gary [illegible]	April 15, 1983
Forestry	Stephen [illegible]	April 26, 1983
Fisheries/Botanist/Wildlife Biologist	Dave Roberts	April 19, 1983
Lands		
Minerals		
Recreation	Mark Goldbach [illegible]	April 22, 1983 4/25/83
Wilderness/ACEC		
Cultural	John [illegible]	4/19/83
Visual		
Environmental Coordinator *(reviews EAs)*	[illegible] Thompson	4/25/83
Support *(Chief of Operations/Fire Management)*	Bruce Carroll	4/26/83
Others		
5. Reviewed by Area Manager	Joseph M. [illegible]	4/20/83
6. Reviewed by Chief of Resource Management	William [illegible]	4/20/83
7. Draft HMP and EA reviewed by State Agency authorized officer *or other cooperators).*	[illegible]	5/9/83
8. Final review *(if appropriate)* by State Director	Maxwell T. [illegible]	5/11/83
9. Reviewed and approved by District Manager	[illegible]	5/5/83
10. Approved by State Agency authorized officer		

Remarks

* U.S. Government Printing Office: 1981-780-779/692 Reg 8

INTRODUCTION

REASONS FOR PREPARATION

This HMP was prepared in response to national concern, expressed in the form of Federal mandates, for conservation of wetland habitat and the socially and economically important wetland associated wildlife. The HMP establishes a systematic mechanism for improving fish and wildlife habitat at reservoirs on public lands. Increasing waterfowl numbers was selected as the primary objective because of the numerous opportunities to improve production of this nationally important resource. Recent observations indicate that many ducks now spend the spring and summer months on reservoirs in this area without raising broods. Whether these are non-breeding adults and/or non-successful breeders is not known, but it appears in either case that they would produce young as others do, if better habitat conditions existed. Increased production would ensure that all suitable habitat would be utilized in the future. Also, nearly all wildlife that use reservoir habitat will benefit from waterfowl habitat improvement projects because they incorporate BLM ecosystem management practices. Establishing sport fish habitat near population centers will create additional reservoir fishing opportunities for local citizens.

Efforts of this HMP are to improve watershed and habitat conditions through the life of reservoirs by implementation of established reservoir management practices which will reduce impacts of the following factors. Heavy livestock use which causes soil compaction and removes vegetation by grazing and trampling, is the major cause for failure to achieve desirable habitat conditions at many reservoir sites. Lack of a natural seed source and failure of wetland vegetation to proliferate also retards habitat development at some sites. Drastic annual fluctuations in water depths and poor water quality prevents maintenance of desirable habitat conditions for production of waterfowl and use by other wildlife.

Implementation of the ecosystem management approach as directed in BLM Manual 6780-Habitat Management Plans, requires improvement and maintenance of habitat for all species that use them. In the case of reservoirs, integration of different land management goals ensures creation and maintenance of a desired diversity of plants, animals, and habitat and improvement of watershed conditions on which they all depend. Management proposals in this HMP follow BLM ecosystem management guidance for improving unacceptable habitat conditions and maintaining habitat already in satisfactory conditions as a means of increasing fish and wildlife numbers.

Some specific reasons for development of this HMP exists in the form of laws, strategic plans, executive order, Bureau policy and MFP recommendations. Applicable Federal laws are numerous, but the most supportive include the Federal Land Policy Management Act, Public Rangelands Improvement Act, and Sikes Act. Executive Order 11990, for protection of wetlands, directly supports efforts as proposed in this HMP.

BLM Manual 6740, which was issued to bring the Bureau into compliance with numerous legal mandates, especially EO 11990, presents policies and procedures for wetland management on public lands. These policies and procedures were used in preparation of the HMP. Accepted Management Framework Plan (MFP) multiple use recommendations dealing with reservoir management formed the specific basis for the HMP. A synopsis of MFP fish and wildlife objectives and multiple use recommendations applicable to this HMP are listed in Appendix 6. The Strategic Plan of WG&FD also contains numerous references that support efforts proposed in this HMP. Applicable Department objectives, goals, and recommendations for meeting them are included in Appendix 7.

ECOSYSTEM DESCRIPTION

The lands in the HMP area range in elevation from about 4,400 feet in the northeast to 11,000 feet in the southwest. Precipitation varies from 6 inches on the basin floor to 20+ inches in the Absaroka Mountains. The lands below an elevation of about 6,000 feet are typified by vast expanses of badland and short grass-shrub communities intermixed with scattered stock-watering reservoirs and riparian zones along intermittent streams. Higher foothill and mountainous areas are a mixture of forest and bunchgrass-sage complexes. Cultivated lands are mainly limited to narrow corridors along two major perennial drainages flowing east across the southern half of the area and on terraces along the Bighorn, Greybull, and Wood Rivers and Owl Creek which are mostly in private ownership and serve as a natural border of the area.

The area contains five large (greater than 125,000 acres) watersheds that drain directly into the Bighorn River. The Bighorn River is a major tributary of the Yellowstone River. With the exception of Fifteenmile Creek, these perennial streams have their headwaters in the Absaroka Mountains on lands managed by the Forest Service, and include Owl Creek, Cottonwood Creek, Gooseberry Creek, and the Greybull River. Water quality is good in the headwaters of these streams, but deteriorates rapidly on the basin floor, primarily because of sediment loading.

Standard habitats in the area include 23 terrestrial and three wetland types. The palustrine (marsh) habitat type, with which this HMP is concerned, consists mostly of artificial stock-watering type reservoirs below 6,000 feet elevation. The other major wetland habitat is the riverine type associated with perennial and intermittent streams. Several artifical lacustrine (lake) associated habitats also exists on public land in the form of irrigation reservoirs. These differ from the palustrine type in being deeper and larger.

Wildlife use of the wetland habitat type far exceeds use on an acre-for-acre basis than on any of the terrestrial types in the area. This was highlighted during inventory efforts relative to bird, small mammal, and reptile and amphibian use in the area (Fitton and Howe 1980; Madsen et al 1980; Madsen, Gilbert and Parks 1980). Field observations on larger mammals occupying the lowland areas also substantiate their heavy use of

wetland habitat types. For purposes of this HMP it is noteworthy that nesting waterfowl and shorebirds were most abundant on stock-watering reservoirs. They included mallard, pintail, blue-winged teal, green-winged teal, eared grebe, American coot, American avocet, killdeer, spotted sandpiper, and common snipe.

Identified distribution of fish on public land in the area is limited to the perennial streams and to four small irrigation reservoirs along the northern edge of the area. In a survey of 109 of the approximately 800 reservoir sites on public land in the HMP area, none of the typical stock-watering sites had depths sufficient to support fish during winter. Stock-watering reservoirs in adjacent areas of the Big Horn Basin do, however, support fish. Opportunities exist for modification of existing reservoirs and construction of new ones in the HMP area to support fisheries.

RELEVANT CONSTRAINTS

This HMP was prepared within all known constraints resulting from laws, Department and Bureau policy, other program requirements, and GCRA Management Framework Plan (MFP) multiple use recommendations and projected decisions. Wilderness, archeology, recreation, range, wildlife, and watershed program constraints are discussed in a subsequent section on coordination and in the Environmental Assessment Record (Appendix 4).

The multiple use recommendations in the MFP determined what specific actions were proposed in the HMP, and the final MFP decisions will dictate which and how they will be implemented. If any MFP decisions differ significantly from existing final recommendations, the HMP will be modified accordingly. The MFP is available for public review in the Grass Creek Resource Area (GCRA) office in Worland, Wyoming. Examples of some MFP multiple use recommendation constraints that controlled preparation of the HMP and that will govern project implementation are listed in Appendix 8.

Additional implied constraints also are clarified in the HMP. Maintenance of all necessary sites for livestock watering is included as a specific constraint because this is a prime use of reservoirs. Another added constraint is that grazing will be allowed on protected reservoir sites within grazing system that allow development and maintenance of good watershed conditions and wildlife habitat. Both these constraints are included to ensure attainment of BLM multiple use management objectives for most reservoir sites.

SIKES ACT PROVISIONS

This HMP was prepared, and is to be implemented, under the auspices of the Sikes Act. Its preparation meets criteria of the August 1976 Memorandum of Understanding between Wyoming Game and Fish Commission and Bureau of Land Management for cooperation in preparing and implementing HMPs.

LAND STATUS/ADMINISTRATION

The HMP area is located in northcentral Wyoming and includes portions of Hot Springs, Washakie, Big Horn, and Park counties. The land ownership status is shown in the following table:

Acres Of Land By Ownership

BLM	Bureau of Reclamation	State	Private	Total
965,000	6,000	100,000	405,000	1,476,000

MANAGEMENT OBJECTIVES

General objectives in the wetland-aquatic portion of the MFP are to expand, improve, and maintain habitat for support of fish and wildlife. Specific MFP multiple use recommendations for achieving the foregoing objectives are presented in Appendix 6. On the basis of these MFP objectives and multiple use recommendations, the following HMP objectives were developed:

Waterfowl

1. Improve duck nesting and rearing habitat on 100 reservoir sites to regularly produce ducks during normal and wet water years. (This objective is measurable from a monitoring standpoint.)

2. Expand the present goose production area by modifying at least five suitable reservoirs to meet their nesting and rearing requirements. (The specific number of reservoirs (five) is included as only an interim objective as no survey has been done to determine the number of existing sites which have potential.)

Fish

1. Improve Wardell Reservoir fish habitat and desirability as a fishing area.

2. Create sport fish habitat in two existing or new stock watering reservoir sites through modification of maintenance and construction design proposals. (For present monitoring purposes, this objective will be considered reached when two stock watering reservoirs are modified to support sport fish during maintenance or construction activities.)

3. Create sport fish habitat in highly accessible areas through modification or construction of at least three reservoirs to specifically meet fish habitat needs.

Other Wildlife

1. Construct new and modify existing stock watering reservoirs to meet designated wildlife needs. (For monitoring purposes, this objective will be considered as fully reached when 50 percent of the maintenance and construction projects include provisions for improving wildlife habitat.)

PLANNED ACTIONS

Planned actions have been prioritized to maximize fish and wildlife benefits and minimize expenditure of funds. Highest priority actions are those that involve dovetailing HMP work into routine reservoir construction and maintenance proposals within the range program. In actions not involving the range program, priority has been based on expected fish and wildlife benefits to accrue, costs, and ease of implementation. Actual project priorities will be determined on a case by case basis to ensure maximization of a variety of benefits at minimum expense. Selection of future projects will be determined by availability of funds and identification of opportunities exhibiting the best benefit/cost ratios.

The following description of the nine proposed planned actions are in order of priority. More detail on implementation is included in the appendix for actions three and four which entail specific field project recommendations for FY 1983 and 1984.

1. Include fish, waterfowl, and other wildlife habitat improvement practices within the range program's routine maintenance projects on stock-watering reservoirs.

   This indirect action is given top priority as reservoir maintenance occurs regulary and waterfowl production and other wildlife habitat improvement practices can oftentimes be included in the projects with minimal effort and expense. Fish habitat creation will be actively pursued whenever a feasible opportunity arises.

   Inclusion of waterfowl and other wildlife habitat improvement practices within the range program's routine maintenance projects on reservoirs will take place on a case by case basis. Biologists will accompany the inspection crew and submit proposals for including waterfowl production and other wildlife habitat maintenance and improvement practices within each project proposal. As a general rule, inspections of sites in need of maintenance are conducted far enough in advance to allow sufficient time for requesting of funds in the upcoming Annual Work Plan (AWP). Funding of specific wildlife activities requiring significant expense will be handled within the HMP. Where insignificant expense is involved in minor project modification, or the action is necessary to increase reservoir longevity, funding will be handled mainly within the range program. As an example, fencing of Wardell Reservoir is being planned as a cooperative cost-sharing effort because both programs are beneficiaries.

   Specific activities in FY 1983 include participation of wildlife staff in reservoir inspection activities, recommending fish and wildlife improvements, and requesting of project funds in the AWP. The first on-the-ground improvements within this action will take place in FY 1983. This action is a continuous one which, if actively pursued, allows for major improvement of reservoir habitat for wildlife with a minimum of expense.

2. Construct new stock-watering reservoirs to better meet fish, waterfowl production, and other wildlife needs.

This indirect action is given high priority as new stock-watering reservoirs are regularly built within the range program, and waterfowl production and other wildlife habitat improvement practices can be included in nearly every project with minimal expense and effort. When a new reservoir proposal offers an opportunity for creation of sport fish habitat through project modification, that specific opportunity will be actively pursued.

Biologists will routinely accompany the site-selection crew and submit recommendations for inclusion of practices to create fisheries and expand wildlife habitat. As with maintenance projects, new construction is planned sufficiently far in advance to allow time for requesting of funds in the AWP. Implementation of specific fish or wildlife practices requiring large expenditures would be financed with HMP funding. If insignificant expense is involved in implementing habitat improvement practices or the practice improves conditions for livestock watering or increases reservoir longevity, funding usually will be handled within the range program.

Activities for FY 1983 include participation in all site inspections and formulation of recommendations to maximize expansion and subsequent protection of fish and wildlife habitat at each new reservoir site. The earliest implementation of on-the-ground projects in this planned action will be FY 1983 when proposed reservoirs are built. Extensive expansion of fish and wildlife habitat will be attained because 50 new stock-watering reservoirs are planned to be built during the next 10 years following completion of the grazing EIS. This planned action is a continuing one that allows for major expansion of fish and wildlife habitat with a minimum of expense.

3. Improve sport fish, waterfowl production, and other wildlife habitat in Wardell Reservoir.

This is the highest priority fisheries action because opportunities exist to improve fish habitat through stabilization and maintenance of the water levels and also, it is the only reservoir on public land in the resource area which is presently managed as a sport fisheries by WG&FD. Opportunities to increase use of the sport fish resource also exists through establishment of aesthetically pleasing type settings by planting trees and shrubs.

All opportunities for improving sport fish habitat in Wardell Reservoir through stabilization of water levels will be investigated and those showing potential will be pursued.

Maintenance of water levels and volumes will be sought to maximize habitat for the fish species being managed by WG&FD. Possible avenues for obtaining water for maintenance of fish habitat include:

1. Develop cooperative agreements with existing users of water stored in the reservoir to minimize habitat degradation.

2. Seek cooperation of new water users to attain better management of fish habitat in Wardell.

3. Buy water from the Water District that controls Sunshine Reservoir and divert to Wardell at times when needed to maintain fish habitat (water rights consideration necessary).

4. Seek cooperation of the Water District that controls Sunshine Reservoir in supplying available interim water for maintenance of fish habitat in Wardell Reservoir as a public service effort.

5. Increase the reservoir capacity and seek a Greybull River spring flood flow water right to achieve maximum fish habitat maintenance.

The waterfowl production and other wildlife habitat aspect of this planned action initially will be investigated as part of a more comprehensive proposal for management of the public lands and waters in the immediate vicinity (Appendix 6). If this comprehensive proposal is not pursued for some reason, waterfowl production and other wildlife habitat improvements for Wardell and adjacent reservoirs will be addressed individually. In any event, proposed efforts for Wardell Reservoir will be coordinated with the range and recreation programs as they have made proposals for fencing and creation of a recreation site (Appendix 6).

Activities in FY 1983 includes the investigation of the foregoing possible approaches and pursuit of ones which show promise (Appendix 1). Subsequent Desert Land Entries (DLEs) in the area which utilize the existing water system, will be analyzed to ensure that maximum fish and wildlife habitat be maintained in either the new reservoirs or in Wardell.

4. Improve waterfowl production and other wildlife habitat on existing reservoirs.

This is the highest priority direct action for waterfowl and other wildlife because many habitat improvement practices can be implemented without significant additional funds through use of existing personnel and/or volunteers. Other major projects such as installing fences to protect reservoir habitat can also be conducted with existing or temporary personnel. When insufficient manpower exists, projects can be contracted out as in the past.

Improvement projects for waterfowl production and other wildlife on existing reservoirs will be conducted to maximize benefits for time and money spent. Selection of reservoirs for improvement receives major emphasis to ensure maximization of benefits. Important factors considered in the selection process include:

1. Reliability of the reservoirs water supply.

2. Remaining functional life of the reservoir.

3. Ease of maximizing habitat benefits and subsequent wildlife use.

4. Total cost of improvements.

In FY 1983 funds and work months are being requested to implement, on an experimental basis, the identified practices on ten reservoirs and to conduct project survey and design on five others (Appendix 2).

Additional efforts in FY 1983 include field examination of the other reservoirs with high potential for determination of improvement needs in FY 1984. Those selected for improvement as a result of the examination will be included in the AWP for FY 1984. This monitoring effort will take place on a continuing basis each year to ensure selection of reservoirs which are in most need of improvement the following FY. Re-prioritization of all recommended projects will take place annually to ensure maximization of habitat improvement for funds expended. The existing reservoir data storage system will be maintained to record monitoring data and ensure ease of prioritizing projects on an annual basis.

5. Modify or construct reservoirs near population centers or in highly accessible areas to support sport fish.

Although this direct action will produce significant fishing opportunities for the general public in the area, it has only a moderate priority because no suitable sites have been identified. Also, construction of large, deep fish reservoirs is expensive and funding constraints are unknown. Potential sites will be evaluated as they are identified.

Creation of sport fish reservoirs near population centers and/or in highly accessible areas will receive priority emphasis only where a public demand for this type fishing opportunity is identified. Highest priority will be given to this effort when local agencies agree to cooperate in the development and maintenance of sport fish reservoir sites.

Assurance of sufficient water to provide adequate depth to maintain winter survival is mandatory if maximum quality fishing is to be attained. Maintenance of over-wintering habitat can be ensured either through establishment of adequate depth (at least 12-14 feet over 1/4 or more of the surface area) or by supplying sufficient inflow during winter. Site selection for construction of sport fish reservoirs will be made to ensure year-long support of sport fish and maximum reservoir longevity.

Efforts in FY 1983 will be to identify sites possessing potential for establishing reservoir sport fisheries. Identified sites will be evaluated and prioritized based on their apparent suitability. Several of the higher potential sites will subsequently be studied to document suitability and determine proposed project costs. Funds will be sought when there is public support for their construction. The priority list of sites will be re-evaluated on a continuing basis following construction of each new sport fish reservoir to ensure optimum distribution of fishing opportunities.

6. Identify existing reservoirs with suitable fishery habitat and recommend introduction of game and non-game fish as the habitat dictates.

This is a low priority action as previous inventories have not resulted in identification of a single existing stock-watering reservoir with habitat suitable to guarantee sustained support of fish. If suitable reservoirs are identified on public land, submission of recommendations to WG&FD for stocking will receive immediate priority in order to achieve available recreational and wildlife benefits.

Identification of existing reservoirs possessing suitable habitat for support of game and non-game fish will take place on a continuing basis. Game fish would usually be introduced only where some recreational use is possible. Where access is very difficult and use would be low, naturally reproducing populations would be considered as these require little long-term investment as compared to fisheries dependent on continuous stocking. Where little fishing use would develop or primary management is for waterfowl and other wildlife, introduction of a non-game prey species capable of reproducing naturally in a reservoir would take place.

Activities in FY 1983 include evaluating sites previously identified as possessing some potential for support of fish. The identification of potential sites was made based either on quantitative data gathered in 1977 during a contract inventory or on visual observations made subsequently by the range staff. Evaluation of other stock-water reservoirs exhibiting fish supporting potential will be made as identified during surveys to select sites for waterfowl and other wildlife habitat improvements. Identification of any existing stock-water reservoirs possessing adequate habitat to

support a viable fishery will be followed by recommendations to WG&FD to stock them. If no existing sites capable of supporting a sport fishery are available, all efforts will subsequently be channeled towards constructing some as discussed in No. 5. The three irrigation reservoirs identified in 1977 as containing fish in the vicinity of Wardell Reservoir will also be evaluated in FY 1983 to determine species composition and potential for management.

7. Create waterfowl production habitat through construction of new reservoirs.

This is a low priority action due to construction costs. Selection of sites possessing significant opportunities will be given high priority to ensure implementation of the action should funds become available for such projects.

Construction of new reservoirs for waterfowl production purposes will only be pursued where significant benefits can be achieved for funds expended. Due to territoriality of breeding waterfowl, numerous nesting pairs cannot be maintained on typical stock-watering reservoirs even when habitat conditions are good. As a result efforts to build new reservoirs primarily for waterfowl must either be large enough to support numerous pairs or small and inexpensive to warrant the costs. Opportunities may exist to create both types within channels which carry perennial flows of water from oil fields or where water is available from other sources. Construction of a large reservoir with many nesting islands might be used to extend goose nesting into a new area.

Activities in this action for FY 1983 will entail evaluation of sites during field survey work connected with planned actions numbers 4, 5, and 6. This will allow identification of sites possessing the greatest potential and evaluation of possible project proposals which could be implemented should funds become available. Additonal effort will be expended to identify available sources of water which would allow development of either a series of small reservoirs or individual large ones for waterfowl.

8. Construct reservoirs where water is needed to expand or maintain areas for support of antelope and mule deer.

This is a low priority action because no areas have specifically been identified where lack of water is the limiting factor. Should an area be delineated, priority will depend on project costs and benefits.

Reservoirs will be built where needed to maintain existing antelope and mule deer habitat and where a need is identified for extension of their range into new areas. Type of reservoirs constructed will depend on the needs of big game and the potential of possible sites for other wildlife use in a general area. Incorporation of plans to

achieve other wildlife benefits will be determined on a case-by-case basis to achieve maximum benefits for funds expended. Site selection for reservoirs in new areas must be thoroughly investigated to prevent creation of livestock-wildlife conflicts.

Initial delineation of areas where water is needed for antelope and mule deer will be made in FY 1983. Areas recommended for construction of big game watering reservoirs will be prioritized and constructed in subsequent years as funds are made available for this effort. Continuing effort will also include maintenance of critical existing reservoirs and updating of the priority list.

In association with this planned action, provision of water for antelope from existing reservoirs will be pursued when necessary. Antelope are oftentimes stressed when reservoirs freeze before any snow accumulates in late fall or early winter. When this problem is identified, efforts will be made to provide drinking water through the most expedient manner.

9. Investigate the feasibility of developing waterfowl production habitat within the Anchor Reservoir site.

Full support and cooperation of the Bureau of Reclamation (BR) will be needed before any specific project would be designed. This planned action receives a low priority due to potential problems associated with implementing an interagency agreement and because costs and benefits of possible projects will not be investigated until an agreement is signed. Determining the feasibility of doing cooperative work and implementation of an agreement receives high priority to ensure that waterfowl benefits will be achieved if the Bureau of Reclamation wishes to proceed with habitat work and if funding becomes available.

Pursuit of this planned action to develop waterfowl habitat within the Anchor Reservoir Basin will initially be only to investigate the willingness of the BR to undertake such an effort. They are still trying to plug the seep holes and make the reservoir function for irrigation purposes. The reason for pursuing this planned action is that significant waterfowl production and hunting opportunities could be achieved here as done in Canyon Ferry Reservoir near Helena, Montana. In essence, numerous diked ponds with nesting islands could be created on the reservoir floodplain, above expected flood levels, through diversion of water from South Fork Owl Creek. Such a network of ponds could be filled each year with peak flood flows. Waterfowl management practices could even include release of some pond water in mid and late summer for use by downstream irrigators.

Activities in FY 1983 will only entail an initial feasibility investigation meeting with BR personnel. If BR cannot participate or allow for such use, this planned action will be totally dropped. If, however, they express an interest and want to proceed, WG&FD and BLM will assist in development of project plans and seek funding for

construction as agreed to within a cooperative agreement. Prioritization of actual projects will be made based on expected waterfowl production and recreational and hunting benefits.

SPECIFIC PRACTICES

Many established specific practices will be implemented to achieve the waterfowl and fishery objectives at selected reservoirs throughout the HMP area. Habitat condition and objectives will be used as the basis for selection of specific practices for implementation at each reservoir site. A listing of specific practices which have been used successfully elsewhere and that might be useful here include but are not limited to:

Waterfowl (Ducks and Geese)

1. Dig or blast pits within reservoirs that dry up to ensure maintenance of water for fledging of ducks.

2. Design new reservoirs with shallow flats for growth of submergent and emergent plants and waterfowl feeding.

3. Introduce desirable vegetation (submergents, emergents, forbs, and grasses) for waterfowl food and cover within reservoirs and in adjacent nesting areas.

4. Build islands for waterfowl nesting and escape cover.

5. Build waterfowl production reservoirs in clusters and locations where long-term benefits are ensured.

6. Install and evaluate various floating, island type structures for isolated nesting and resting sites.

7. Install and evaluate various types of goose and duck nesting structures.

8. Remove silt from old waterfowl producing reservoirs to lengthen physical production life of these sites.

9. Manage livestock use by methods available to ensure maintenance and availability of waterfowl food supplies and of nesting and rearing cover.

10. Design maintenance of projects to include improvements for waterfowl production and general retention of existing wetland habitat.

11. Increase depths of shallow, silted reservoirs containing good habitat by raising elevation of spillways or weep pipes to extent acceptable from an engineering standpoint.

Fish

1. Install drawdown facilities in sport fish reservoirs to facilitate managment.

2. Drill wells to establish water supplies where necessary to achieve site objectives and/or build reservoirs where good artesian supplies exists.

3. Construct sport fish reservoirs near population centers and/or with good public access.

4. Build sport fish reservoirs as large as feasible and design to ensure maintenance of at least 12 to 14 feet of water depth over at least 1/4 of the pond area at freeze-up time.

5. Install user safety and comfort facilities and plant trees to create a desirable setting at sport fish reservoirs. (Facilities probably would only be installed where some other agency accepts the maintenance responsibility as BLM lacks sufficient funds for such purposes.)

6. Build sport fish reservoirs in clusters to achieve a greater variety of fishing recreation in one area.

7. Establish control of water levels by means available (water rights, agreements, etc.) to maintain fish habitat.

8. Install fish cover structures in warm water sport fish reservoirs.

9. Create spawning areas where needed in warm water sport fish reservoirs.

10. Utilize feasible oxygenation techniques where needed to improve winter survival of valuable sport fish.

11. Through exchange, acquire lands ideal for sport fish reservoirs near population centers where suitable public land is not available.

12. Assist WG&FD in establishing sport fish, and manage the habitat in balance with the selected fisheries (put-and-take, fingerling trout, reproducing warm water, etc.).

13. Publicize and sign established sport fish reservoirs.

14. Improve public access where needed to ensure sport fish utilization.

15. Improve water clarity in turbid reservoirs through use of accepted floculation techniques.

16. Establish a maintenance plan for each sport fish reservoir to ensure that the sites are kept in acceptable condition.

Fish, Waterfowl, Other Wildlife, Wetland Habitat, and Watershed

1. Fence reservoirs to control levels of livestock use that currently conflict with objectives for fish and wildlife habitat and watershed protection.

2. Where feasible and necessary enclose areas seven times larger than the reservoir to avoid siltation and minimize livestock crowding of fences and ensure the maintenance of adequate sediment storage, protection of dams, and creation of adequate nesting cover.

3. Plant vegetation and install trash-catcher type structures in drainages entering reservoirs to capture silt and extend the functional life of the watering source and habitat.

4. Dig silt retention pits in new reservoirs to increase longevity.

5. Plant and maintain trees and shrubs to benefit fish, wildlife, and watershed conditions at reservoir sites.

6. Utilize available water from wells, canals, agricultural drainages, oil fields, and streams to improve fish and wildlife habitat.

7. Install water-gaps or off-site watering facilities where needed for livestock watering facilities on fenced reservoirs.

8. Plant vegetation, install protective barriers, or place riprap on dams and spillways where needed to extend reservoir longevity.

9. Incorporate necessary watershed practices (i.e., grazing control, seeding, etc.) around reservoirs where improvement of water clarity and reduction of sedimentation is necessary for meeting fish and wildlife needs.

10. Control wetland vegetation in and associated with reservoir sites as needed to benefit fish and wildlife.

11. Utilize off-channel sites for reservoirs where in-channel placement is unfeasible but water is available.

12. Build reservoirs for big game and upland bird watering in dry areas designated for wildlife expansion. (Other methods of supplying water may be more feasible in many areas).

13. Increase reservoir water storage where needed for fish and wildlife habitat through raising of dams, spillways, and weep pipes; silt removal; and transfer of water.

14. Recommend that WG&FD introduce non-game fish in suitable reservoirs where they will reproduce and serve as a food source for wildlife.

15. Physically maintain open water in reservoirs for antelope watering where needed during years of early freeze-up and late snowfall.

16. Install snow fences to increase runoff into reservoirs.

17. Prevent indiscriminate placement of salt and/or protein blocks adjacent to reservoirs.

EVALUATION AND MONITORING

A summary of the studies and analyses to be conducted to monitor and evaluate progress in accomplishing HMP objectives and success or failure of individual planned actions is presented in Table 1.

Waterfowl use and production will be monitored at each reservoir where HMP practices are implemented. Coupled with waterfowl evaluations, response of reservoir habitat to implementation of specific practices will also be monitored simultaneously. These combined efforts will ensure development of a waterfowl-habitat data base on which to evaluate established methodologies and design new projects for maximization of waterfowl production and other wildlife benefits on area reservoirs.

Specific reservoirs have been identified for monitoring purposes from those evaluated in 1982 (Appendix 3). Additional information is needed on water level stability, water quality, and water regulation capability before specific projects can be developed which will ensure attainment of habitat benefits. A special effort will be made to monitor waterfowl production on very small reservoirs to establish the approximate minimal size necessary for production of ducks in this area. This information is needed as a basis for selection of future projects on small reservoirs so that efforts are not wasted in implementing projects on reservoirs too small to be normally selected for nesting by breeding waterfowl.

Evaluation of habitat condition and waterfowl and other wildlife use will be carried out at previously identified high potential reservoirs in the western part of the HMP area not examined in 1982 (Appendix 3). The data collected will be catalogued within our reservoir data management system which contains all the existing information gathered in the past on wetland habitat condition and waterfowl use observations at each reservoir site. Based on the old and newly collected data, proposed projects will be re-prioritized each year to ensure maximization of future project benefits. Delineation of reservoirs possessing fisheries potential will also be made during this evaluation effort.

Specific monitoring and evaluation of fishery habitat will also take place in the area. Species composition and habitat conditions in reservoirs previously identified as containing fish will be evaluated in conjunction with WG&FD. Monitoring of fisheries and habitat in HMP project reservoirs will also be coordinated through the Department to ensure collection of necessary management data. Data will probably be gathered on fishing use and success, population parameters, and habitat quality.

Evaluation of habitat condition and potential and fish and wildlife use will be fairly extensive the first two years or until all high potential reservoirs are examined. Following that, monitoring will be limited to evaluating extent of projects success and as needed to re-prioritize project proposals. To minimize monitoring costs, it will be conducted simultaneously during field project work when practical.

TABLE 1
MONITORING AND EVALUATION SCHEDULE

Type of Study	Planned Action Served	Method	Time Frame	Responsibility	WM	Results Expected
Waterfowl Production	1,2,4,7,9	Observation	April-July	BLM & WG&FD	.5	Nesting and fledging success
Total Waterfowl Use	1,2,4,7,9	Observation	April-October	BLM & WG&FD	.2	Species diversity & abundance
Other Wildlife Use	1-9	Observation	All year	BLM & WG&FD	.2	Species diversity & relative abundance
Vegetation-Habitat Survey	1-9	Photo Plot and qualitative observation data	Mid summer	BLM	.5	Species diversity, relative abundance, reproductive success, growth rate
Fish Population Surveys	3,5,6	Netting	Every 2 or 3 years	BLM & WG&FD	.5	Species diversity, relative abundance, reproductive success, growth rate
Fishing Success	3,5,6	Spot checks and volunteer surveys	Irregularly during each year	BLM & WG&FD	.5	Harvest rate and fishing success
Aquatic Habitat Survey	3,5,6	Collection of physical, biological, and chemical data	Each year during periods of possible stress	BLM & WG&FD	.3	Determination of habitat suitability

A specific research project is proposed to evaluate waterfowl production at various types of reservoirs in the HMP area. Past research has been limited mostly to higher rainfall areas and wetland plant ecology was not addressed. The project will stress evaluation of production of ducks relative to wetland vegetation, water quality, reservoir use, size, etc. The preponderence of apparently non-breeding and/or non-successful breeders on area reservoirs will also be investigated. Factors controlling survival, distribution and proliferation of wetland plant species will be documented at representative reservoir sites. This type of intensive research needs to be done to evaluate all projects, especially vegetative manipulation efforts, in order to develop techniques for maximizing waterfowl production benefits in future projects. The work could best be conducted through support of a graduate student under an agreement with the U.S. Fish and Wildlife Service, Wyoming Cooperative Fishery and Wildlife Research Unit for the FYs 1985 and 1986.

One key to maintaining an effective evaluation and monitoring system is to maintain a data management system that allows comprehensive analysis of all relevant information. The reservoir habitat data system now contains the known data recorded by all BLM staff since 1976 (mostly collected by Range Conservationists). This data base was used for identifying reservoirs with apparent potential. Seventy of these were subsequently examined in 1982 and preliminary project recommendations were developed for this HMP. The remaining ones with apparent potential will be examined in 1983 and preliminary project recommendations developed.

Future use of the data management system will form an important part of the HMP. Keeping the system current will enable selection of projects which will yield maximum benefits. It will also form a data base on which projects implemented by other programs can be evaluated from a habitat standpoint. Additionally, long-term data assimilation will enable further documentation of habitat-production relationships which can be used to design projects specific to the needs of fish, waterfowl and other wildlife in the HMP area.

Form 6780–2
(July 1981)
(formerly 6620–3)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
Waterfowl 1 – Improve duck production habitat on 100 reservoirs.		No. 1, 2, 4, 7		Field evaluation of habitat improvement, condition, and trend. Waterfowl use observations.	
Waterfowl 2 – Modify each (5) suitable reservoir to meet goose nesting requirements.		No. 1, 2, 4, 7, 9		Field observations to determine use of new nesting facilities and fledging rate.	
Fish 1 – Improve the Wardell Reservoir fisheries.		No. 3		Field surveys to determine species abundance, fishing success, and habitat suitability.	
Fish 2 – Establish & improve sport fish habitat in two new or existing stock watering reservoirs.		No. 1, 2, 3, 5, 6		Field surveys to determine species diversity and habitat suitability.	
Fish 3 – Create sport fish habitat in at least three highly accessible reservoirs to specifically meet fish habitat needs.		No. 5		Field surveys to determine species abundance, fishing success, and habitat suitability.	
Wildlife 1 – Construct new & modify existing reservoirs where needed to meet designated wildlife needs.		No. 1, 2, 4, 7, 8, 9		Field surveys to determine water and habitat needs.	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

U.S. Government Printing Office: 1981-780-780/693 Reg. 6

COORDINATION WITH OTHER BLM PROGRAMS, AGENCIES, AND ORGANIZATIONS

BLM PROGRAMS

Forest Management

Too few trees of sufficient size exist around most reservoirs to even attract illegal fire-wood cutting activity. No reservoirs exist in areas encompassed by the existing Forest Management Plan. Growth of trees will, however, be encouraged around reservoirs primarily managed for sport fisheries and for wildlife purposes. On reservoirs primarily managed for waterfowl production, large trees will be restricted to small areas in order to achieve waterfowl benefits while still improving habitat for other wildlife. Expertise of the District Forester will be sought when tree planting activities are undertaken at selected reservoir sites.

Rangeland Management

Coordination with and assistance from personnel of the range staff and livestock permittees is required in order to achieve HMP objectives. All existing stock watering reservoirs are contained within grazing allotments and were constructed for livestock and wildlife watering use. The range staff will fill a significant role in coordinating HMP activities between range users and personnel responsible for HMP projects. All accepted HMP proposals will be incorporated into existing and new Allotment Management Plans to ensure total integration into the range programs management efforts. With total integration of livestock grazing, vegetation management, and HMP activities affecting reservoirs, both programs will mutually benefit through maintenance, improvement, and expansion of watering sources for livestock and habitat for fish and wildlife.

Significant benefits will accrue to the grazing industry as a result of HMP project implementation. This occurs through an extension of usable reservoir life for livestock watering. Life expectancy of protected reservoirs increases and frequency of repairs declines as a result of improved watershed conditions, increased capture of silt by upstream reservoir vegetation, and protection of dams with bands of vegetation. Vegetation production will increase at each site and serve as forage for livestock on a scheduled basis. Water quality of livestock water will improve as a result of filtering of silt and utilization of nutrients by wetland vegetation and in creation of offsite watering sources. Improvement of water quality is one simple animal husbandry technique for increasing livestock production. Also, recent research indicates that emergent plants, as found on reservoirs, do not transpire significantly more water than what occurs through evaporation from open water areas.

Requirements of the range program in activities affecting reservoirs and other wetlands are now quite numerous. The latest direction from the Washington Office comes in Manual 6740--Wetland-Riparian Area Protection

and Management which provides the policy and final internal procedures to bring Bureau programs into conformance with the intent of Presidential Executive Order 11990 for the Protection of Wetlands.

Policies from Manual 6740 relative to grazing and reservoirs management include:

1. "Design grazing systems and management practices to give riparian vegetation the protection necessary to maintain and restore habitat cover and diversity, shoreline/streambank stability, reduce sedimentation, provide water temperature ranges suitable for desirable aquatic life, and to meet State and Federal water quality standards. BLM Manual Section 4111.32D5c (allowances for wildlife), 4112.11A4a (habitat requirements for small wildlife forms), 4112.1A4b (fish habitat), 4112.11A4e (exclusion from ungulate grazing), and 4412.21F (crucial areas) establish policy and procedures applicable to range management and protection in wetland/riparian habitat. Grazing management procedures may include livestock management practices or protective fencing to exclude grazing use in riparian zones."

2. "Construct and maintain reservoirs in a manner, where possible, to expand and maintain downstreams wetland and riparian habitat. Closely coordinate all water development and maintenance plans with wildlife, fisheries, and watershed specialists to maximize protection and enhancement opportunities. Protective fencing to maintain vegetation for wildlife food and cover, and soil stability should receive strong consideration as a viable component of the project."

Implementation of grazing management as described in Manual 6740 was previously implied in FLPMA of 1976. Reservoir management as stated above has since been re-emphasized in the most recent policy Instruction Memorandum (No. 81-296) on maintenance of rangeland improvements and use of 8100 funds. Previous reservoir management guidance was given in Manual Release 6-37 of November 14, 1972. Multiple use MFP recommendations have included provisions for achieving fish and wildlife benefits at reservoir sites.

Guidance for management of stock watering reservoirs for improvement of waterfowl production has been developed. Gjersing (1975) stated, "In the establishment and management of rest-rotation systems, the range manager can increase benefits to waterfowl if the following guidelines are applied:

1. Construct retention type ponds instead of dugouts whenever possible.

2. After the end of the earliest treatment (spring and early summer grazing) move cattle out of the pasture

and close the gates behind them. This will allow for regrowth of the vegetation and provide residual cover for nesting the following spring.

3. Delay grazing of pastures with residual cover (those rested or those grazed only during spring and early summer the previous year) until incubation is completed on most nests - approximately July 1 in this area."

Further guidance is provided in the Bureau's Technical Note 327, "Construction and Management of Stockponds for Waterfowl," by Eng, Jones, and Gjersing.

"Continuous grazing permits livestock to graze an area throughout a grazing season, year after year. Waterfowl breeding pair use on continuous grazed areas is directly related to intensity of grazing. Brood production follows the same pattern. This reduction in brood use on heavily grazed areas is apparently due to reduced amounts of brood cover and food on these areas. Waterfowl production may be increased on these areas by reducing grazing intensity where possible, or at least staying within recommended stocking rates where overgrazing occurs.

"Deferred grazing is a management plan which is designed to allow for reproduction and restoration of vigor in designated range plants. A given unit of land is usually divided into pastures and certain pastures are not grazed until the "key" range plants have produced seed. Usually this grazing system is combined with rotation so all pastures periodically receive the benefits of deferred use.

"If a general increase in vegetation results from a specific deferred grazing system, waterfowl numbers can be expected to increase. Gates should be closed following the grazing treatment." Both Gjersing (1975) and Mundinger (1976) found increased numbers of breeding pairs and broods the years following gate closures after the grazing treatment on rest/rotation areas.

In the case of fisheries, livestock grazing systems designed to improve waterfowl habitat by providing adequate residual vegetative cover on the uplands and desirable shoreline vegetation will benefit existing fishery habitat. Vegetative cover will prevent wave erosion, reduce sediment loads, provide cover, and provide littoral zone vegetation for lake spawning fish species. Thus, management of these ponds can serve a multiple resource purposes. New stock watering ponds constructed for support of sport fisheries should be fenced and offsite watering facilities provided for livestock.

Proposed implementation of rest/rotation grazing in "I" and changes to fall-winter grazing in "C_1" category allotments should result in overall improvement of waterfowl nesting conditions around some reservoirs in the HMP area. In most allotments the earliest possible implementation of these grazing practices will probably be 1987 following completion of the Grass Creek Resource Area Grazing EIS in 1982 and subsequent range monitoring

efforts. Development of preliminary project proposals were somewhat based on improvements which might occur at each reservoir if proposed grazing systems are implemented.

Several reservoir projects are in allotments where AMPs are in effect. The proposed preliminary projects include two for FY 1984 where protective fencing appears necessary to achieve waterfowl and recreation benefits. Two others entail plantings or structures to improve conditions for waterfowl use. As new AMPs or grazing systems are developed for "I" category allotments, reservoir management for multiple-use purposes will be incorporated into them.

Range personnel must keep the wildlife staff informed about changes in grazing practices and reservoir modifications to ensure maximization of achievable fish and wildlife benefits with the HMP. Wildlife staff will likewise keep the range personnel fully informed of HMP proposals to ensure achievement of livestock benefits where feasible.

Recreation Management

The main consumptive recreation uses in the HMP area are hunting big game, upland game birds, morning doves, and waterfowl and fishing for cold and warm water fish. These activities are totally compatible with habitat improvement plans and serve partially as the economic justification of project proposals. If recreational fishing activity significantly conflicts with waterfowl production at a stock watering reservoir, a site management scheme mutually developed by both recreation and wildlife personnel will be prepared for the site. Maintenance of recreational fisheries will usually be given priority where use is high. Hunting activity will not conflict with waterfowl production due to a time separation between uses.

Both the recreation and wildlife programs have recommendations for management of Wardell Reservoir. It is expected that a conflict between efforts to establish a breeding goose population and to increase fishing at Wardell Reservoir will develop during the spring nesting period (April and May). During this interval fishing and/or boat use may be eliminated or restricted to a limited portion of the reservoir. In any event a specific use plan will be developed for each site where a conflict is identified.

A significant emphasis of this HMP is toward production of fish and wildlife for utilization by the public. Establishment of sport fisheries is totally geared to increasing fishing opportunities for local residents in and adjacent to the HMP area. Additional waterfowl production will increase and improve hunting in local as well as far distant areas. Increases in other wildlife species as a result of habitat improvement on reservoirs will also result in additional hunting, trapping, and nonconsumptive uses.

Maintenance of constructed facilities and high use sites in rural areas can become a serious problem. For that reason, a site specific maintenance

plan will be prepared before any facilities or sites are constructed or developed. Due to limited capabilities and funding of BLM and WG&FD to handle such maintenance activity, attempts will be made to get local and county agencies to accept the maintenance responsibility.

Amount of recreational use associated with newly established fisheries and increased waterfowl numbers will be highly dependent on factors falling at least partially within the responsibility of the recreation program. Personnel of both staffs will cooperate in developing publicity releases, access plans and signs, interpretive signs, health and safety facilities, visual improvement (creation of aesthetically pleasing settings), and methods for assessing public use. Significant publicity will be needed initially to make people aware of the newly available recreation opportunities.

Wildlife Management

This HMP will be closely coordinated with the existing district-wide Bighorn River HMP. Designation of the HMP under which implementation of reservoir projects in the river zone are conducted will be made by the Area Manager. Since the original recommendation for creation of fishing ponds in the Bighorn River HMP have a low priority, any effort in this area is expected to be handled in this reservoir HMP.

Some reservoirs will be eliminated from this HMP when area-wide terrestrial HMPs are implemented. Existing reservoir projects and proposals will become a part of the terrestrial HMP which geographically encompasses them. This will ease management problems associated with administering multiple HMPs by preventing boundary overlaps.

Development of a habitat management unit for the complex of irrigation reservoirs and other wetlands in the Otto area has been recommended. When established it will either be as a part of this HMP or a new one will be written specifically for the unit. The proposed management area will need to be within an HMP, as done for the Table Mountain Wildlife Unit near Torrington, Wyoming, to better ensure regular fundings.

Wilderness Management

Wilderness study areas exist in the HMP area. During the time these regions are under wilderness study constraints, any project proposals will be cleared for approval by using Interim Wilderness Management Guidelines. Following wilderness designation of an area, projects will be subject to Wilderness Management Policy constraints.

Soil-Water Management

Attainment of HMP benefits are highly dependent on maintenance and improvement of watershed conditions. Watershed deterioration at any

reservoir site could easily destroy the beneficial effect of proposed reservoir projects through water quality degradation, silting of reservoirs, and erosion of dams resulting from increasing rate of runoff. Improvements of watershed conditions in individual reservoir drainages will result in improved habitat condition and extension of the reservoir's useful life. Increasing and maintaining good reservoir vegetation coverage will also help to improve soil stability and water quality. Silt input to streams will be reduced as a result of extending the life and silt holding capacity of reservoirs.

Expertise of the watershed staff will regularly be utilized in selecting project sites and improving and maintaining projects. The district hydrologist will be needed to define water yields and quality so that projects can be modified accordingly. His assistance will also be needed in obtaining water rights for some of the projects. Evaluation of proposed project sites by a soil scientist is needed to determine water retaining ability of the soil. These aspects are especially critical if full, long-term benefits of new fisheries reservoir projects are to be attained. In essence, the ecosystem management approach of this HMP requires that watershed staff be fully utilized to not only ensure that their resource goals are met but also that those of the wildlife program are attained.

Wild Horse Management

Feral horses can have the same impact on reservoir vegetation and wildlife habitat as do domestic livestock. Projects implemented on reservoirs used by feral horses will be designed to maintain availability of drinking water.

Energy/Mineral Management

Impact of oil and gas activities on reservoir habitat generally occurs from increased sediments resulting from surface disturbances. Where reservoirs exist down a drainage from a drill site or pipeline corridor, extra care should be taken to stabilize the disturbed soils. The required 500-foot setback of facilities from the edge of reservoir associated vegetation is necessary to ensure habitat utilization by waterfowl and other wildlife and to reduce the number of accidental spills entering reservoir waters. Removal of water from reservoirs for drilling purposes will have to be more thoroughly scrutinized to prevent needless degradation of waterfowl and other wildlife habitat.

Fire Management

Control of unauthorized burning is necessary to prevent needless loss of reservoir habitat. Although not considered a serious problem, burning of reservoir vegetation occasionally occurs and can cause serious long-term degradation when trees are involved. At the present, no prescribed burns

are planned for reservoir habitat manipulation as dense undesirable vegetation problems have not developed at any reservoirs in the past.

Support Activities

Assistance of the Division of Operations will be needed in designing projects, writing contracts for facilities, supervision of construction work, conducting boundary surveys, building roads, and conducting maintenance work. Some projects may be conducted through use of temporary fire crews and force account funds.

Assistance of the realty specialist will be needed in projects requiring land exchanges and access easements.

OTHER AGENCIES AND ORGANIZATIONS

Wyoming Game and Fish Department

Coordination with the Wyoming Game and Fish Department has taken place as provided for under the Sikes Act. Personnel of the Game Division District No. 2 and the Fisheries Management Area No. 22 out of the Cody Office have been involved in field coordination and preparation of the HMP. Leonard Serduik, the Department's Waterfowl Supervisor, and David Lockman, Waterfowl Biologist, were interviewed for their input and reviewed the HMP. They indicated a desire to participate in future project work.

The Department will continue to have an active role in implementing HMP proposals. As the sole agency responsible for management of resident species and equal responsibility with the U.S. Fish and Wildlife Service (USFWS) for management of migratory birds in Wyoming, their input and expertise is needed to ensure U.S. Fish development of HMP projects to meet Department Strategic Plans for the species involved.

U.S. Fish and Wildlife Service

The HMP was discussed with personnel of the USFWS Area Office in Billings, Montana, and Northern Prairie Wildlife Research Center in Jamestown, North Dakota. Main emphasis of discussions was directed toward wetland vegetation ecology and reservoir habitat improvement techniques for increasing waterfowl production. Personnel of both offices indicated a willingness to assist in a technical manner with HMP project proposals. The draft HMP document was reviewed and comments submitted by personnel of the USFWS Ecological Services Office in Cheyenne, Wyoming.

Grazing Permittees

Coordination of the HMP and future projects with grazing permittees is very important due to their vested interest in stock watering reservoirs. As already mentioned, most reservoirs were specifically built to provide water for livestock use. Many of these were constructed with funds received from grazing fees and some were actually built by the livestock operators. Ranchers also play a vital role in reservoir maintenance by either doing necessary work themselves or reporting maintenance needs to BLM.

Initial coordination of the HMP was achieved by sending the range users a letter informing them about BLM's proposal and the possibility of a future project occurring in their allotment. A summary (abstract) of the draft HMP was sent with the letter to inform them of the general objectives and content of the HMP. They were also invited to review the draft HMP and discuss it relative to their allotments with BLM staff. Similar letters were sent to the three members of the Grazing Advisory Board who represent the GCRA and to the Hot Springs County Range Representative to inform them about the HMP. An offer was also extended to make presentations about the HMP at Grazing Advisory Board or range user meetings.

Grazing permittees will be contacted whenever a project is proposed in their allotment. As mentioned in the letters to the range users, notification of proposed projects will be made far enough in advance to allow time for evaluation and submission of comments on them. BLM will give consideration to all comments and will incorporate as many recommendations as possible to ensure meeting livestock water needs at project reservoirs. The fact that no habitat improvement efforts will be pursued that would prevent livestock access to a necessary water source, represents a commitment of BLM to meet livestock watering needs at project reservoirs.

The range staff will be utilized to ensure proper coordination of project efforts with the range users. Ranchers now have a close working relationship with the range staff on the functioning of their allotments of which the reservoirs are an integral part. For this reason and because of the range staff's familiarity with allotment operations, they will serve a vital role in coordinating HMP efforts with the range users.

Conservation Organizations

Informal presentations on the HMP have been made to the Hot Springs County Sportsmen Association of Thermopolis and the Bighorn Basin Wildlife Club of Worland. Following completion of the draft, a letter and copy of the abstract were sent to each club informing them of the HMP status. An offer was made to further discuss and/or review the document with them.

WILDLIFE ECONOMICS

A comprehensive economic analysis of the various planned actions prescribed in this area-wide HMP cannot be made at this time. Data necessary for an economic analysis is presently lacking as only preliminary project proposals have been developed. Specific implementation plans will subsequently be developed on a project-by-project bases. Each project plan will entail both a benefit/cost (to the extent possible) and a least-cost approach analyses to ensure maximization of benefits for the money expended. A cost-effectiveness analysis will also be done on each project and on similar projects, as a group, to ensure that the most beneficial alternatives are highlighted. The completed economic evaluations, along with a summary of other aspects of the projects which must be considered, will be presented to the area manager for his use in selecting projects for funding and prioritizing their implementation.

Economic analyses of waterfowl production and other wildlife projects on public lands, as for other resource uses, should take into consideration both the positive and negative impact of the actions. Typical public land activities oftentimes have negative impacts on such base resources as soil, water, vegetation, and wildlife. In the case of the proposed HMP which is based on the Bureau's ecosystem management approach, nearly all side effects are beneficial. For example, not only will HMP projects help reverse the downward trend in the nation's waterfowl numbers and improve conditions for nearly all wildlife using reservoirs, but they will enhance watershed conditions, increase forage, improve water quality, and extend reservoir life for livestock use. These positive aspects will be given consideration in all project evaluations.

Some information needed for economic evaluations are available at this time. For example, the present cost estimate for floating rafts is $40.00 each, goose nesting structures is $50.00 each, and fencing is $3,000.00 per mile (Appendix 2). Information also exists on the economic value and evaluation methodologies for recreational use of fish and wildlife resources.

Numerous methods exist for calculation of the economic value of hunting, fishing, and non-consumptive recreation use of wildlife and fish. In the following discussions, established values as developed by BLM and WG&FD were used for the analyses. Another appropriate method that can be used is based on a "willingness to pay" evaluation but official dollar value estimates for hunting and fishing in this area do not exist. Dollar value estimates can also be somewhat misleading because some of the users are already participating in recreation activities and attracting them to new areas does not result in significant new expenditures. In the following analyses, the estimates of user days are an indicator of expected recreation use but the dollar values only represent results for two of many ways that economic calculations can be made.

WATERFOWL

Use of the waterfowl resource produced within the HMP area includes both consumptive and nonconsumptive use onsite and offsite. Onsite, consumptive use is limited to the early hunting season prior to freeze-up. Consumptive use entails hunting of migrant waterfowl as well as those produced in the HMP area. Numbers of birds available for hunting from each source will increase as a result of improving and increasing habitat. Hunting pressure will steadily increase as the public becomes aware of the improved hunting opportunities on HMP reservoirs. This will occur as a result of increased numbers of locally produced and migrant ducks on reservoirs during the hunting season. Offsite use of waterfowl produced in HMP projects takes place at the same rate as for production elsewhere.

Nonconsumptive use of waterfowl project reservoirs will depend on their locations. Those sites visible from the main roads will be visited often during the summer months. Most summer visitors will limit their use to observing waterfowl and other wildlife from their vehicles. Following distribution of publicity information on projects, nonconsumptive use will increase.

Habitat improvement efforts will be eventually applied to 100 reservoir sites. Production is expected to eventually average two or three broods per site for an estimated total of 250 fledged broods averaging six birds each. Based on data that 20 percent of the waterfowl in the nation are harvested each year, that two ducks are harvested per hunter day, and that BLM uses $6.00 value per hunter day, the 1,500 waterfowl produced will support 150 hunter days valued at an estimated $900.00. Hunting on the 100 managed sites will increase as migrant waterfowl use the reservoirs more heavily in the fall. It is expected that average annual waterfowl hunting use will eventually exceed 20 visits per site for a total of 2,000 visits valued at $4,000.00 (three visits are considered equal to one hunting day). If WG&FD's most recent economic expenditure value per hunting day ($33.35) is used, the foregoing values are $5,000.00 and $22,233.00 instead of $900.00 and $4,000.00. With an increasing human population and reduced opportunities to hunt other species in the area, future waterfowl hunting should increase beyond these projections. It is expected that the demand for duck hunting will eventually exceed the supply in the HMP area. Goose production and hunting will also increase but not at the rate for ducks due to the general small size of most reservoirs.

FISH

The fisheries aspects of the HMP are more amenable to a direct economic evaluation. This results because all fishing use and benefits occur onsite. Additional benefits do occur to waterfowl and other wildlife species, watershed, and livestock as previously discussed. Visitor use not related to the fisheries will also be heavy as a result of high accessibility and provision of aesthetically pleasing picnic type settings.

The three reservoirs established for sport fish will support 3,150 user visits annually. This is based on establishment of two trout fisheries and a warm water fishery (bass) which will annually support 1,050 fishermen visits each. Attainment of the trout fishery at this level of use will require regular stocking by WG&FD. The bass fisheries will not attain this level of use until sufficient time passes for the initially stocked fish to establish a stable population in balance with the habitat. Based on BLM values of $10.00 per trout fishing day (12 hours of fishing), $6.00 per warm water fishing day, and visits average three hours each, annual value for the three reservoirs is $6,825.00. If WG&FD's economic expenditure value per fishing day ($50.21) is used, the total value is $158,162.00.

These fisheries projections are very tentative as use is highly variable based on fishing success and accessibility and aesthetics of the reservoir area. Many area fishermen are already attuned to stream trout fishing and some will initially balk at pond fishing. Based on use at heavily fished bass and trout ponds such as Renner Reservoir and Newton Lakes, in the Bighorn Basin, it is expected that use at new ones near population centers of the HMP area will generate significant fishing pressure.

General leasure use to the initial three fisheries reservoirs should equal that projected for fishermen following establishment of aesthetically pleasing settings. This nonconsumptive use is presently considered equal in value to a warm water fisherman day ($6.00) and will eventually have a total value of $4,725.00 per year. Non-consumptive use such as bird watching and wildlife photography will also take place at reservoirs managed for fish and wildlife but no estimates of use have been made for these.

Total fishing and nonfishermen use will continue to increase on easily accessible reservoirs as the human population of the area continues to grow and costs to reach the increasingly crowded mountain stream systems escalate. Provision of desirable high use recreation sites near population centers or in highly accessible areas represents wise utilization of public lands under existing economic, energy, and growth trends. Forthcoming benefits to such a large portion of the local populace and reducing energy use of recreationist should serve, by itself, as economic justification for establishment of high-use recreational fisheries reservoirs on public lands.

Actual benefit/cost ratios of proposed fisheries reservoirs cannot be calculated until specific sites are selected. Construction costs vary greatly with locations. Sites will generally be selected to achieve the best possible benefit/cost ratio which entails maximizing long-term fisheries use and minimizing construction and maintenance costs. Establishment of fisheries reservoirs will also provide benefits to wildlife, livestock, watershed, etc., as discussed for waterfowl improvements.

APPENDIX

1. Fish Projects
2. Waterfowl and Other Wildlife Projects
3. Evaluation and Monitoring
4. Environmental Assessment Record
5. Reservoir Location Map
6. BLM Management Framework Plan Objectives and Recommendations
7. WG&FD Strategic Plan Objectives, Goals, and Recommendations
8. Habitat Management Plan Relevant Constraints

APPENDIX 1

FISH PROJECTS

FISH

1. First priority within the fisheries portion of the HMP is to improve habitat in Wardell Reservoir. It is an irrigation reservoir (about 80 acres) located in Sections 31 and 32 of Range 95 West, Township 51 North. WG&FD has stocked it with walleye and catfish in the past and presently stocks and manages it for walleye. Water management practices for irrigation purposes have limited fish habitat and at one time caused WG&FD to abandon their management of the fishery.

   Major emphasis will be given to entering into a cooperative agreement with the irrigator to ensure maintenance of the best possible water depths in Wardell for support of fish. This irrigator has submitted a right-of-way application for construction of another reservoir on public land adjacent to Wardell to irrigate additional lands. Operations of this reservoir will also be incorporated into the cooperative agreement to ensure maintenance of the best possible water level conditions for fish habitat in both reservoirs.

   A second portion of the Wardell Reservoir project is to develop an aesthetically pleasing picnic area for fishermen use. Presently, trees and wetland vegetation are basically nonexistent around the reservoir. Installation of a small boat ramp, picnic tables, and sanitation facilities would not take place until fish habitat and facility maintenance are ensured. First year efforts on the recreation site will be to fence an area and plant trees to start a desirable setting. The planted area will serve as wildlife habitat should the site not be further developed for recreation use.

   Additional projects are proposed for Wardell Reservoir within the waterfowl/wildlife portion of the HMP. Some of these, such as fencing and planting, will improve fishery habitat and create a more desirable aesthetic setting, but they are mainly to improve waterfowl (duck and goose) and other wildlife habitat. Primary management of Wardell Reservoir will be directed toward development of good fisheries if desirable water levels are ensured. If WG&FD does not foresee significant fisheries benefits accruing, more emphasis will be given to improving waterfowl and other wildlife production and use. Presently, it appears the western end of the reservoir could be managed mostly for wildlife and the eastern half for fisheries. The Range Program has proposed to fence Wardell Reservoir. Fencing will probably be handled as a cooperative range/wildlife effort after boundary lines are determined.

2. Two additional irrigation reservoirs on public land downstream of Wardell Reservoir appear to have sport fisheries potential. These are located in Section 34 (Wardell No. 1) and Section 24 (Unknown No. 215) of Range 95 West, Township 51 North. The former appears to have the greatest depth during winter.

Efforts during the first year will be to monitor changes in depth under the existing irrigation schedule and determine if fish habitat conditions can be improved while still allowing the irrigator to fully meet his needs. If suitable sport fish habitat exists or can be maintained through implementation of an agreement with the irrigator, a request will be made to WG&FD to stock fish. Use facilities such as proposed for Wardell Reservoir, would be developed as needed. Both these reservoirs also have waterfowl and other wildlife projects proposed.

3. Identification and evaluation of potential fisheries reservoir construction sites will be started the first year. To date, the only identified site on public land which has potential exists in Section 22 of Range 95 West, Township 44 North. This ephemeral channel site has perennial flow mainly as a result of drainage from irrigated fields and partially from release of oil field discharge water. Preliminary observations indicate sufficient depth for survival of fish during winter appears attainable with a relatively small dam. The site will be further evaluated the first year from the soils, geology, hydrology, water quality, engineering and access standpoints to determine acceptability for holding sufficient water and supporting game fish. A project will be proposed for the site if all criteria are suitable and another agency is willing to assume maintenance responsibility for the area.

A passive search for additional potential sites for construction of sport fisheries reservoirs will be made while conducting other field work during the first year. Evaluation of those with high potential will be made the following year.

APPENDIX 2

WATERFOWL AND OTHER WILDLIFE PROJECTS

WATERFOWL AND OTHER WILDLIFE

Reservoirs evaluated in the field during 1982 and recommended for waterfowl production and other wildlife habitat improvement projects were divided into three main categories. Reservoirs in the first category were not heavily grazed and habitat improvement can be achieved through expansion of existing vegetation; planting of other emergents, submergents, trees, and shrubs; and construction of floating or earth islands and nesting structures (Table 1). Second category reservoirs presently are heavily grazed and a change in grazing systems or fencing appears necessary to allow survival of naturally invading and planted wetland vegetation on which production of waterfowl is dependent (Table 2). The third group of reservoirs include those in need of structural alterations of dams and spillways to increase water depths and ensure continued maintenance of existing habitat (Table 3).

Reservoirs within each project category were prioritized based on expected waterfowl and other wildlife benefits and recreational use to accrue for the money and effort expended in habitat improvement. Specific items used in prioritization included ease of implementation, projected increases in waterfowl production and other wildlife use, and existing accessibility. Proposed projects for the first year include the first 10 reservoirs in category one. Project survey and design studies will also be conducted in 1983 on the first 5 in category two, and all of category three as listed in the following tables. These and/or others will be proposed for funding in FY 1984. Fencing will only be considered where reservoir watershed and habitat objectives cannot be achieved within grazing systems.

Three additional groups of reservoirs were formed from those evaluated in the field during 1982. The first group contains reservoirs that can serve as a source of seeds and seedlings for planting of cottonwood, willow, cattail, bullrush, etc. at other sites (Table 4). The second are those which require monitoring of water persistence, water quality, and waterfowl production before specific projects are proposed on these or similar reservoirs (Appendix 3). Those in the third group have little potential for habitat improvement due to small size, lack of water, and breached dams and will not be considered further unless selected for restoration within the range program.

TABLE 1
CATEGORY NO. 1 RESERVOIRS
Recommended Projects for Reservoirs which do not Appear to be Limited by Grazing Activity

NAME AND LOCATION (Priority Order)	**Plant	ACTIONS Floating Island	Goose Nesting Structure	Water Level Regulation	Monitor Water Persistence	Misc.	*Material Cost $
Rock Waterhole 96-48-2-NE-NW	X	2					80
Car 96-48-11-NE-SE	X	1			X		40
Gwynn 95-44-22-NW-NE	X						0
Mechlem 93-51-33-NE-NE	X	1					40
Bryson 96-44-8-SE-NE		1					40
Northeast 96-44-15-NW-NW		1					40
Unknown No. 211 94-51-25-SE-SW	X	1					40
Triple Catch Detention 94-48-34-NE-SE		1					40
Unknown No. 268 94-50-30-NW-NE	X						0
Mayland 94-51-34-NE-SW	X	1					40
Wardell No. 1 95-50-3-NE-NW	X	2	2	X	Place Straw on Existing Island		180
Jones 95-51-35-NW-SW	X	1	1	X			90
Unknown No. 215 95-51-24-SE-NW	X	1	1	X			90

TABLE 1
CATEGORY NO. 1 RESERVOIRS
Recommended Projects for Reservoirs which do not Appear
to be Limited by Grazing Activity
(Cont'd.)

NAME AND LOCATION (Priority Order)	**Plant	ACTIONS Floating Island	Goose Nesting Structure	Water Level Regulation	Monitor Water Persistence	Misc.	*Material Cost $
Unknown No. 24 94-46-7-NE-SE	X				X		0
Section 22 94-51-22-NW-NE	X						0
Unknown 91 97-44-11-NE-SE		1					40

*Estimated Costs
Goose nesting structure $50.00
Floating raft $40.00

**Planting will be conducted by BLM and volunteer personnel.
Planting includes submergents, emergents, trees, shrubs, forbs, and grasses.

TABLE 2

CATEGORY NO. 2 RESERVOIRS

Recommended Projects for Reservoirs Which Appear to Require a Change in Grazing Systems or Fencing Before Habitat Improvement Can Be Achieved

NAME AND LOCATION (Priority Order)	Fence (feet)	ACTIONS Plant	Floating Island	Goose Nesting Structure	Water Level Regulation	Misc.	*Material Cost $
North Fork SW 95-48-23-NE-NE	(2880)	X	1			Weep Pipe Repair	1690
Wardell 95-51-31 & 32	(9000)	X	2	4	X	Earth Islands	5380
Unknown 207 93-46-7-SW-NW	(2700)	X	1	1			1620
Refound 95-50-10-NW-SE	(930)	X	1				580
LDS No. 1 94-49-8-SE-NW	(2000)	X	1				1180
Pickup 95-47-4-NW-NW	(3600)	X	1			Peninsula Island	2080
Lots a Rock 95-45-24-SW-NW	(1240)	X	1			Remove Salt Blocks	730
Twin Pockets 95-49-9-NW-SE	(1130)	X	1				670
Nick 96-48-35-SE-SE	(2810)	X	1				1630
Unknown No. 193 96-47-17-NW-NW	(2330)	X	1				1360
Lucy 96-49-14-NE-NE	(3240)	X	1				1870

TABLE 2
CATEGORY NO. 2 RESERVOIRS
Recommended Projects for Reservoirs Which Appear to Require a Change in Grazing Systems or Fencing Before Habitat Improvement Can Be Achieved
(Cont'd.)

NAME AND LOCATION (Priority Order)	**Fence (feet)	ACTIONS Plant	Floating Island	Goose Nesting Structure	Water Level Regulation	Misc.	*Material Cost $
Drabbs No. 2 96-47-13-NW-NW	(2670)	X	1				1570
Nieber Gooseberry 95-46-12-NW-NW	(2500)	X	1				1450
Cow Camp 96-49-1-NW-SW	(2910)	X	1				1690
Alex 94-46-20-SE-SE	(1280)	X	1			Peninsula Island	760
Shallow 95-50-6-SW-NW	(1280)	X	1				430
Unknown 139 95-49-18-NE-NE	(720)	X	1				460
South Fork Pit 97-47-26-NE-NW	(1520)	X	2				950
Division 94-49-12-SE-SE	(830)	X	1				520
Honks Draw 94-46-28-SW-SE	(2210)	X	1				1300
Elk Creek 93-51-30-SW-SW	(1522)	X	1				910

*Estimated Costs
Fencing is $3,000.00 per mile.

**Fence construction will not be pursued where grazing systems can be used to attain necessary watershed and wildlife habitat improvement and maintenance objectives.

TABLE 3
CATEGORY NO. 3 RESERVOIRS
Recommended Repair Projects to Increase Water Permanency
in Reservoirs Containing Good Waterfowl Production
and Other Wildlife Habitat

NAME AND LOCATION	ACTION	COST
		$
Antelope and Unknown 262 94-50-2-SE-SE & 94-50-2-NW-SE	Raise weep pipe in Antelope and modify spillway in Unknown 262	300
Mayland Monument 94-51-25-NW-NE	Raise spillway	100
Noname 94-51-27-NW-SE	Repair cut in dam	200

TABLE 4
Reservoirs Containing Sufficient Wetland Associated Plants
to Serve as a Seed and Seedling Source

NAME AND LOCATION	PLANT GROUPS					
	Cottonwood	Willow	Roundstem Bullrush	Alkali Bullrush	Cattail	Misc.
Shortstop 94-51-33-NW-NE	X					
Unknown No. 266 94-50-24-SE-NE				X		Spike Rush
O'Conner 95-47-22-SE-SW					X	
Mayland Monument 94-51-25-NW-NE					X	
Antelope-Unknown No. 262 94-50-2-SE-SE				X	X	
Northeast 96-44-15-NW-NW			X		X	
Bryson 96-44-8-SE-NE			X		X	
Unknown 265 94-50-21-SE-SW		X				
Noname 94-51-27-NW-SE					X	
Unknown No. 91 97-44-11-NE-SE			X		X	
Section 22 94-51-22-NW-NE		X			X	
Triple Catch Detention 94-48-34-NE-SE		X	X		X	
Rock Waterhole 96-48-2-NE-NW			X		X	
South Fork Elk 94-50-26-NW-SE					X	
Unknown No. 267 94-50-24-SW-SE	X	X				

TABLE 4
Reservoirs Containing Sufficient Wetland Associated Plants
to Serve as a Seed and Seedling Source
(Cont'd.)

NAME AND LOCATION	PLANT GROUPS Cottonwood	Willow	Roundstem Bullrush	Alkali Bullrush	Cattail	Misc.
Powerline Pit 93-50-19-SW-SE					X	
Car 96-48-11-NE-SE	X	X				
Bryson Complex 96-44-7 and 97-44-12			X		X	Spike Rush
Jones 95-51-35-NW-SW			X			Spike Rush
Unknown 210 94-51-24-NE-SE	X			X	X	
Red Spires 96-49-7-NE-SE		X	X	X	X	Common 3-square
Unknown 262 94-50-2-NW-SE						Spike Rush
Antelope Creek 94-50-2-SE-SE					X	Spike Rush

APPENDIX 3

EVALUATION AND MONITORING

TABLE 5
Reservoirs to be Monitored for Specific Factors Before
Project Recommendations are Made

NAME AND LOCATION	MONITORING ACTION			
	Water Persistence	Waterfowl Production (Small Size)	Water Quality	Water Regulation
Rogers 93-50-29-SE-SW	X			
Powerline Pit 93-50-19-SW-SE	X			
Unknown 267 94-50-24-SW-SE	X			
South Fork Elk Creek 94-50-26-NW-SE	X			
Montgomery Draw 93-49-18-SE-SE	X			
Montgomery No. 1 93-49-18-SE-NW	X			
Unknown No. 146 93-49-3-NE-NE	X			
Hardnose 93-48-26-SE-NW		X		
Noname 93-48-27-NE-SE		X		
Yellow Knob 93-48-9-NW-NW		X		
Unknown No. 214 95-51-23-SE-SE	X			X
Bryson Complex 96-44-7-SE-NW		X	X	
Owl 95-49-34-SW-NW	X	X		
Ridge Charco 96-48-3-NE-NW		X		
Noname 96-48-3-NW-SW	X			

TABLE 5
Reservoirs to be Monitored for Specific Factors Before
Project Recommendations are Made

NAME AND LOCATION	MONITORING ACTION			
	Water Persistence	Waterfowl Production (Small Size)	Water Quality	Water Regulation
UW Exclosure 94-48-30-SE-SW	X			
Unknown 265 94-50-21-SE-SW	X			
North Fork Detention 94-48-19-NW-SW	X			
Red Spires 96-49-7-NE-SE	X			

TABLE 6
Reservoirs with Apparent Potential
that Need to be Examined
in FY 1983 to Determine General Condition and Develop
Recommendations for Future Habitat Improvement Projects

RESERVOIR NAME	LOCATION
Colter Draw	94-47-14-SE-SE
Noname	94-48-34-NE-NE
South Draw	93-47-10-SW-NE
Snoopy	95-50-24-NW-SW
Yorgason No. 1	95-50-12-SE-NW
Rebuild	96-50-2-NE-SE
Unknown 254	96-50-35-NE-NE
Big John	96-51-30-SW-NW
Fenton	97-51-19-SW-NE
Unknown 219	97-51-35-SE-NW
Unknown 218	97-51-31-SW-SE
Twin	97-50-6-SW-SW
Gollum II	97-50-33-NE-SW
Pig Pen	96-50-33-SE-SE
Big Pit	96-50-33-NW-NE
Blackburn	97-49-9-SW-SW
Faramir	96-49-31-NE-SW
Pipeline	96-49-34-NW-NE
Unknown 258	95-50-19-NE-NW
Five Mile	95-50-34-NE-SW

TABLE 6
Reservoirs with Apparent Potential
that Need to be Examined
in FY 1983 to Determine General Condition and Develop
Recommendations for Future Habitat Improvement Projects

RESERVOIR NAME	LOCATION
Jeanne's	95-49-2-NW-SW
South Fork	96-48-21-SE-SW
Island	97-48-24-NE-NW
Paradise	97-48-20-SE-SW
Two Well	97-48-32-SW-NW
Cow Foot	97-48-25-SW-SE
Rankine South Fork	97-47-11-SW-SE
Noname	97-47-7-SE-SE
Oxbow	97-47-17-SE-NE
F. E.	97-47-19-NE-NW
Frodo	96-47-10-NE-NE
Late Pit	95-46-8-SW-NW
Fulfer	96-46-7-NW-NW
Noname	96-46-7-SW-SW
Rusty Can	97-46-21-NW-SW
Blue Mesa No. 1	96-46-33-NE-SW
Unknown No. 21	95-46-9-SE-SE
Dvarshkis	96-44-12-SW-SE
Noname	94-48-11-NW-NE
Feraud	95-47-24-SE-SW
Butler Draw	94-47-19-NE-NW
Unknown No. 17	97-46-28-SW-SW

TABLE 6
Reservoirs with Apparent Potential
that Need to be Examined
in FY 1983 to Determine General Condition and Develop
Recommendations for Future Habitat Improvement Projects

RESERVOIR NAME	LOCATION
Noname	98-51-25-NW-NW
Unknown 221	98-51-26-SE-SW
Black Powder	98-51-35-SE-NE
Fence	98-50-2-SE-SW
Eddie's	98-50-3-SW-NE
Unknown 229	98-50-23-SW-NE
Red Butte	98-50-21-NE-SW
Mud Spires	98-50-19-SW-NE
Last	98-50-31-NW-SW
Happy Hollow	98-50-34-SW-NW
Last Chance	99-50-13-NW-SE
Patty	98-49-5-NW-SE
Badger Basin Charco	98-49-7-NW-NW
Hehnke	98-49-12-NE-SE
Elevenstone	98-49-13-SE-NE
Bowel	98-49-22-SE-NW
Sleeper	99-49-1-NE-SW
Larsen	99-49-12-NE-SW
Comer	98-48-18-NW-SW
George's First	98-48-28-SE-SW
Noname	99-48-26-NE-SW
Noname	99-48-35-NW-SE

TABLE 6
Reservoirs with Apparent Potential
that Need to be Examined
in FY 1983 to Determine General Condition and Develop
Recommendations for Future Habitat Improvement Projects

RESERVOIR NAME	LOCATION
Big Draw	99-47-1-SE-NW
Merry Wood	99-47-2-SE-SW
Unknown No. 38	99-47-2-SE-NW
Cottontail	100-48-26-NE-SW
Schultheis	100-48-27-SE-SE
L U	99-47-22-SE-NE
Buffalo Rim	99-47-17-SE-SW
Unknown No. 41	99-47-33-SW-NE
Noname	99-47-7-SE-NE
Rooster Creek	100-47-18-NE-SE
Thirty Five	98-45-2-NE-NW
Unknown No. 52	98-45-6-SW-NE
Rankine	99-45-15-NE-NE
Hughie	100-44-28-SW-NW
Noname	100-44-33-SW-SE
Yard	100-43-8-SE-NW
Noname	96-43-26-SE-SE
Sheet	98-50-16-NW-NW

APPENDIX 4

ENVIRONMENTAL ASSESSMENT RECORD

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Worland District Office

ENVIRONMENTAL ASSESSMENT RECORD

Registry No.: WY-011-1223

Title: Grass Creek Resource Area Reservoir Habitat Management Plan

Location: T. N., R. W., Grass Creek Resource Area

Prepared By: Richard Kroger and Jeff Denton

Reviewing Staff:		Name	Date Reviewed
Lands			
Wildlife	x	Dave Roberts	9/13/82
Range	x	Ken Dotson	9/22/82
Minerals			
Forestry			
Recreation	x	Mark Goldbach	9/22/82
Hydrology	x	Bill Wilson	9/22/82
Archaeology	x	[illegible]	9/21/82
Soils	x	Paul Jaeger	9/14/82
Operations	x	James Kay	9-22-82
Chief of Resources			

Concur: Joseph M Wichman, Resource Area Manager — 11/20/83 Date

Reviewed Concur: John Thompson, Environmental Coordinator — 4/25/83 Date

Approved: [illegible], District Manager — 5/5/83 Date

ENVIRONMENTAL ASSESSMENT RECORD

A. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The Grass Creek Resource Area proposes to implement a Reservoir Habitat Management Plan to improve wetland habitat for fish and wildlife as recommended in the Management Framework Plan. Improvements will be achieved on existing stock watering and irrigation reservoirs through implementation of projects to repair dams, remove silt, install sediment traps, control water levels, increase desirable vegetation through planting, construct waterfowl nesting and resting structures, install fences to control livestock utilization of wetland vegetation, and erect signs for recreational purposes. Similar efforts will be employed to develop and maintain wetland habitat at new stock watering and irrigation reservoirs on public land. Reservoirs will also be constructed to specifically provide for sport fishing opportunities, waterfowl production, and big game watering.

The purpose of the HMP is to implement management actions which will allow achievement of desirable fish, wildlife, and recreation benefits on existing and new stock watering and irrigation reservoirs. Another major purpose is to provide a mechanism by which fish, wildlife, and recreational benefits can be achieved through construction of new reservoirs for these specific purposes. Justification for such efforts on public lands has been established in numerous laws and executive orders. The BLM policies and guidelines for management of reservoirs directly support proposed HMP projects and goals.

Specific objectives of the HMP are to implement habitat management practices on 100 reservoirs and attain goose production wherever the opportunity exists. Other objectives are to construct a minimum of three new reservoirs for support of sport fisheries and to establish and improve sport fisheries in existing irrigation and stock water reservoirs. A final objective is to construct new reservoirs and modify existing ones to meet other wildlife needs.

Project implementation within the HMP will be on a continuous basis as funding is received in the future. Stock watering reservoirs are mostly short-lived and continually need modification or replacement to meet livestock watering needs. In order to achieve long-term multiple-use benefits for fish, wildlife, and recreation, HMP projects will be implemented wherever feasible opportunities arise. Maintenance of HMP projects will also take place on a continual basis to ensure achievement of objectives.

At sites where livestock control is necessary to allow wetland vegetation to survive, water gap or off-site watering areas will be developed for use by livestock. Utilization of vegetation on protected reservior sites by livestock will be allowed at a level that does not prevent achievement of desirable fish, wildlife, and recreational goals.

Modification of existing and new irrigation reservoirs on public land will entail the same projects as on stock watering reservoirs. Additionally, however, attempts will be made to coordinate water level fluctuations with the irrigator to improve conditions for fish, wildlife, and recreational use.

This EA assesses the general impact of the entire HMP effort. Individual EAs will subsequently be prepared for each specific project proposal.

No alternatives to the proposal have been identified except the "No Action" alternative.

B. DESCRIPTION OF THE AFFECTED ENVIRONMENT

Condition of existing stock watering reservoirs ranges from turbid mud holes in most places to clear water, well vegetated ones in some locations. The poor condition reservoirs serve only as low quality watering sites whereas the good condition ones provide high quality livestock water and support numerous wildlife species. Irrigation reservoirs on public land generally have good water quality but fail to develop or maintain desirable fish and wildlife habitat due to fluctuating water levels. A more detailed description of the affected environment is included in the HMP. Construction of new reservoirs will modify a few specific sites in the HMP area.

C. ENVIRONMENTAL CONSEQUENCES

All proposed HMP projects are designed to have positive impacts on reservoir wetland habitat conditions and/or to improve conditions for support of fish and wildlife. Fish and wildlife use of typical construction sites will be minimal during the first 2 years while the basin fills with water and stands of vegetation develop. Based on existing reservoir history, productivity for fish and wildlife will steadily improve during the next 15-20 years until it annually goes dry and wetland-associated vegetation dies. The productive life of larger sport fisheries reservoirs should be longer as is the case for existing irrigation reservoirs.

Modifications of existing and new stock watering reservoirs will entail minimal surface disturbance and should produce rapid improvement in watershed conditions at each site. Use of the reservoirs for livestock watering will not be eliminated at any site where needed. It is expected that more forage will eventually be available for use by livestock on fenced reservoir sites than is presently produced. Additionally, water quality will be improved for livestock and longevity of reservoirs increased as as result of proposed projects.

Construction of proposed reservoirs specifically for sport fisheries, waterfowl production, and big game watering will have the same initial site impacts as presently occurs in building stock watering reservoirs. Impact of the surface disturbance on soil loss and water quality will be reduced through encouragement of vegetation proliferation by planting and protection of the site from overuse by livestock. When a reservoir is abandoned after silting in, the dam will eventually breach and soil erosion will begin from the silt deposits. Construction of reservoirs does not foreclose use options for future generations as the sites will, following abandonment, eventually restore themselves to natural condition through geologic processes. The archaeological resource is the only one which might be lost at a site. Each proposed site will be examined for archaeological resources and, and if necessary, reservoir construction be modified to minimize impacts. It is doubtful that a serious conflict will develop based on archaeological clearances obtained for previous stock watering reservoirs.

Project implementation may directly or indirectly affect several other resources. Endangered species may benefit from increased prey species produced at reservoir sites. Floodplains may be affected through reduction of flood flows. Farmland will not be directly affected as alterations in irrigation reservoir management proposals will not interfere with necessary irrigation practices. Wilderness study areas will be affected only if reservoir construction were proposed in them, and in that case interim Wilderness Management Policy Guideline requirements would be followed. No impact is expected to occur to air quality, ACECs, drinking water, historical resources, air quality, and wild or scenic rivers.

The No Action alternative will perpetuate the present reservoir conditions. There will be continued failure to fully achieve desirable fish, wildlife, and recreational multiple use benefits associated with existing and new stock water reservoirs on public land. Watershed conditions will stay in a degraded condition at most sites, erosion will continue to destroy dams, and water quality improvements will not be achieved.

Improvement of the fisheries and waterfowl production in and around the irrigation reservoirs near Otto will not be achieved if no action is taken. Construction of reservoirs specifically for fisheries purposes will not take place. In essence, most opportunities to implement reservoir management projects for creation and improvement of wetland habitat will be lost if the No Action alternative is followed.

D. MITIGATION AND MONITORING

The entire emphasis of the HMP is to improve and maintain desirable wetland habitat in and associated with reservoirs. All identified mitigation measures were made a part of the proposed action.

Monitoring will be carried out on all sites to document successes and failure of implemented projects. Collected data will be used as a base on which to develop new projects and detect where maintenance work is necessary on established ones. Waterfowl production, wildlife use, and recreational use will also be monitored at project sites. Sequence of monitoring will be dependent on available funds and personnel. At a minimum, each site will initially be visited at least every other year. Following determination of project success or failure, subsequent monitoring will be less frequent. Area and district wildlife staff will be responsible for coordinating and conducting reservoir wetland habitat monitoring studies. The range program will also participate in the studies to ensure full coordination of grazing activities within the HMP projects.

E. CONSULTATION AND COORDINATION

Consultation took place with several members of Wyoming Game and Fish Department and U.S. Fish and Wildlife Service (see HMP). Informal discussions about the HMP have taken place at meetings of the Hot Springs County Sportsmen Association and the Bighorn Basin Wildlife Club. Coordination with individuals is limited to grazing permittees who have a vested interest in reservoirs for a livestock watering purposes.

Public involvement will remain an important aspect of the HMP efforts. Support from the ranching community is limited at this time and will remain so until some projects are implemented which show that livestock will also benefit through better water quality, extended reservoir longevity, and increased forage. At the very least, tolerance will develop when it becomes evident that no action will be taken which eliminates necessary livestock watering sources.

Following is a list of people who have participated in development or coordination of the HMP:

Louis Pechacek, Area Fisheries Supervisor, WG&FD, Cody, Wyoming
Terry Killough, District Game Supervisor, WG&FD, Cody, Wyoming
Leonard Serduik, Waterfowl Supervisor, WG&FD, Lander, Wyoming
David Lockman, Waterfowl Biologist, WG&FD, Smoot, Wyoming
Bob Brown, Waterfowl Biologist, USFWS, Billings, Montana
John Lokemoen, Waterfowl Biologist, USFWS, Jamestown, North Dakota
Arthur Anderson, Field Supervisor, USFWS, Cheyenne, Wyoming

EA# WY-011-1223

DECISION RECORD

GRASS CREEK RESOURCE AREA RESERVOIR HABITAT MANAGEMENT PLAN

1. Alternatives Considered

   No Action.

2. Decision and Rationale

   A Implement identified and proposed HMP projects as identified within the GCRA MFP.

   B. The identified and proposed reservoir habitat improvement projects will increase waterfowl production and create fishing opportunities. All other wildlife species which use the reservoirs will also benefit from the improved habitat conditions. Livestock will not be excluded from any necessary watering source. Most habitat improvement projects will improve forage production and water quality for livestock use and will also extend reservoir longevity for livestock watering purposes.

3. Conclusion

   According to the analysis of the HMP in the attached EA, I conclude this action will result in no significant adverse impacts to the environment and that no EIS is necessary.

Joseph M. Vecchiarelli — Area Manager — 4/20/83 Date

Curtis Conard — District Manager — 5/5/83 Date

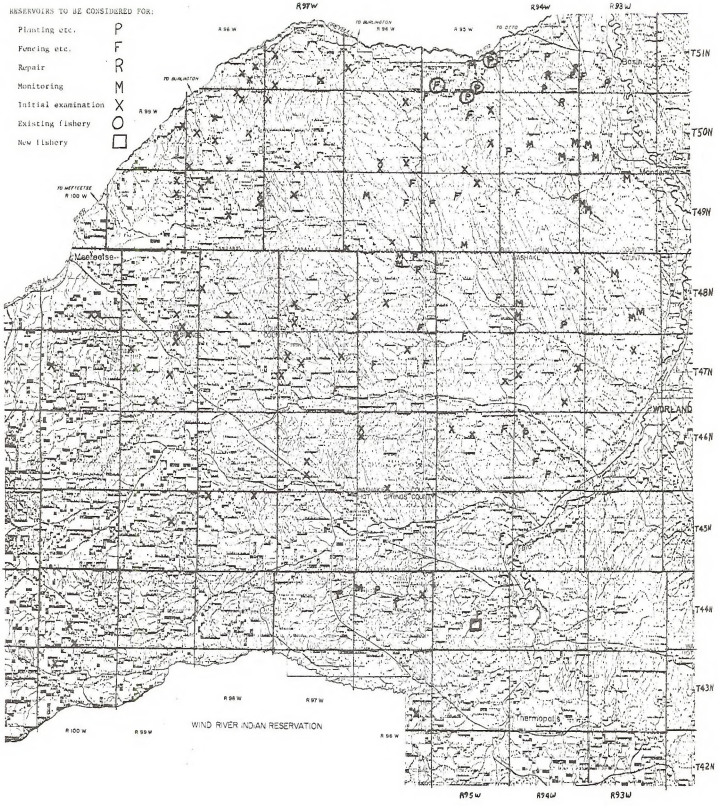
APPENDIX 5

RESERVOIR LOCATION MAP

KEY

RESERVOIRS TO BE CONSIDERED FOR:

Planting etc.	P
Fencing etc.	F
Repair	R
Monitoring	M
Initial examination	X
Existing fishery	O
New fishery	□



APPENDIX 6

BUREAU OF LAND MANAGEMENT

MANAGEMENT FRAMEWORK PLAN

OBJECTIVES AND RECOMMENDATIONS

Objective:

Develop additional wetland habitat to benefit fish and wildlife.

Multiple Use Recommendations

WL-1.1

1. Encourage the construction of reservoirs for game fish fisheries by the BLM, user groups or other cooperative agencies.

2. Design new reservoirs and maintain existing reservoirs to improve or enhance the associated wetland habitat capability to support fish and wildlife.

WL-1.2

Create marsh and pond wetland habitat adjacent to perennial streams, intermittent drainages, irrigation canals and drains and oil field treater discharge areas where sufficient water is available beyond that necessary to support the natural existing ecosystem.

WL-1.3

1. Acquire through exchange the surface ownership of wetlands that are valuable for wildlife habitat. Such exchanges must be favored and supported by the affected private landowner.

2. Acquire an easement for the management of valuable wetlands on adjacent private lands that are an integral part of an important wetland area on public lands. An easement should be pursued after efforts to acquire the lands through exchange fail.

3. Enter into a cooperative management agreement for adjacent wetlands that are owned or controlled by the Wyoming Game and Fish Department or an organization whose primary interest is the protection and enhancement of wildlife habitat.

WL-1.5

Cooperate with the Wyoming Game and Fish Department in introducing fish into suitable reservoirs on public lands.

Objective:

Improve wetland habitat conditions for the benefit of fish and wildlife.

Multiple Use Recommendations

WL-2.1

Explore the feasibility of entering into a cooperative management agreement with the water users, Wyoming Game and Fish Department and Big Horn County for the purpose of protecting, developing and improving existing and potential wildlife habitat and recreation values and facilities for the benefits of multiple use associated with the irrigation storage reservoirs and canals located on public lands in the Wardell Reservoir area immediately south of Otto, Wyoming.

WL-2.3

Reduce turbidity and siltation in reservoirs by creation of vegetation or physical sediment traps and implementation of desirable watershed management practices.

WL-2.4

Fence livestock away from important high potential wetland habitat areas that do not respond favorably to improved grazing management.

WL-2.7

Those reservoirs identified for wildlife habitat improvement in the 6610 file report will be incorporated into the Grass Creek Reservoir HMP scheduled for completion in F.Y. 1982.

WL-2.8

Improve goose nesting habitat around Wardell and other wetlands by fencing to protect nesting areas, installing goose nest structures and developing nesting islands.

WL-2.10

Plant emergent and shrubby wetland vegetation in and around reservoirs following fencing to ensure rapid restoration of habitat conditions and to stabilize shorelines.

WL-2.11

Develop a wetland habitat management plan for the Grass Creek Reservoirs.

Objective:

Maintain condition of wetland habitat which cannot be improved by developing and implementing projects and management practices.

Multiple Use Recommendations

WL-3.2

Require that livestock salt and mineral supplements be located to encourage more livestock grazing away from wetland areas.

WL-3.3

Continue efforts to prevent unauthorized burning of wetlands.

The Bureau's Range Management and Recreation MFP objectives and recommendations also pertain to reservoir management. Some of the recommendations applicable to this HMP include:

RM-3.3

1. The design and location of range improvements will be closely coordinated with the watershed, wildlife, and recreation activities to resolve conflicts, identify constraints, and modifications or additions that will optimize the benefits to be derived from the improvement.

2. Livestock water development and design will where feasible:

   A. Address development of islands in stock water reservoirs for waterfowl.

   B. Address fencing reservoirs and piping water to troughs for livestock to enhance riparian vegetation.

   C. Consider designing reservoirs for fisheries where sites have potential.

   D. Provide that water be available for wildlife during the livestock grazing period and when livestock are not in the area.

   E. Provide that overflow areas on spring developments be fenced.

F. Provide that drip pipes be located along pipelines to establish succulent vegetation areas - these areas should be fenced.

G. Provide that water troughs be partially buried, equipped with bird ladders, and partially covered to cut evaporation loss.

H. Consider designs that will provide open water in wildlife and wild horse areas during winter periods.

R-7.7

Manage and develop Wardell Reservoir and the adjacent shoreline for recreational use of the water and shore based resources of the reservoir.

APPENDIX 7

WYOMING GAME AND FISH DEPARTMENT

STRATEGIC PLAN

OBJECTIVES, GOALS, AND RECOMMENDATIONS

The strategic plan of WG&FD contains numerous references that support efforts proposed in this HMP. For example, the Department projects that statewide outdoor recreation will likely triple by the year 2000. Some of the general applicable policy objectives include:

1. All wildlife should be managed to provide the greatest sustained human benefits. Both consumptive and nonconsumptive uses of wildlife should be structured to produce desired and worthwhile human experiences.

2. Produce and maintain optimum populations of wildlife on all lands and waters in Wyoming suitable as wildlife habitat and consistent with other uses of such lands and waters. Utilize through hunting and fishing the available crop of those wildlife species classified as game.

3. Maintain for all wildlife the best possible habitat conditions consistent with other uses, improve wildlife habitats which are open to public use and encourage private landowners to do the same.

The Department's overall goal stresses cooperation with public land agencies in order to achieve desirable fish and wildlife objectives. Specific Strategic Plan statements include:

1. Participate actively in federal, state and local land use planning.

2. Coordinate efforts with land management agencies to insure adequate consideration for wildlife in their long range plans.

Numerous statements related to HMP efforts for fish, ducks, geese, antelope, mule deer, game birds, and small game are made in the Strategic Plan. Examples of stated problems, strategies, and recommendations applicable to this HMP include:

Fish

1. Encourage private landowners, developers, and other agencies to employ practices which are not detrimental to aquatic habitat.

2. Participate actively during the planning phase of reservoir and other developments affecting aquatic habitats.

3. Develop and implement methods to prevent damage to fisheries resulting from logging, mining, and livestock operations.

4. Investigate the potential of various game fish in waters which have marginal habitat conditions for survival of traditionally used trout species.

5. Increase public interest in game fish other than trout.

6. Increase fishing opportunity in areas of need through acquisitions, easements, habitat development and improvement, and improved sportsman-Department-landowner relations.

7. Work with BLM to obtain a commitment of high priority being given to protection of aquatic habitats on their lands.

8. If proper considerations are given to fisheries habitat in land use practices, land use planning, water development projects, and legislation a significant increase in fishing supply may be realized. Conversely, without these considerations sport fishing supply will be seriously reduced.

9. The primary goal in Region 2 is to maintain or increase the supply and diversity of the fishery by maintaining and enhancing existing aquatic habitat. Reclaim any potential waters lost through inconsiderate actions of the past, encourage development of new waters without jeopardizing existing fisheries, and bring virgin waters into production by stocking.

Ducks and Geese

1. Maintain a population of at least 172,000 breeding pairs of ducks within the state.

2. Maintain a population of at least 5,000 breeding pairs of Canada geese within the state.

3. Procure key duck harvest habitat areas where possible.

4. Protect and manage wetland to maintain the habitat available to ducks in Wyoming.

5. Identify areas of concern and work with agencies or groups to sustain, enhance or restore existing habitat.

6. Trap and transplant geese to increase populations and potential harvest areas.

7. Acquire or develop nesting and/or brooding habitat which will be unattractive to summer recreationists.

Antelope and Mule Deer

1. Increase, where feasible, the amount of available range through habitat manipulation (including controlled burning, water developments, etc.).

2. Where it is shown to be desirable, promote the development of water sources in arid areas.

Game Birds and Small Game

1. Maintain an occupied habitat area of at least 63,000 square miles for sage grouse.

2. Assist in public and private habitat conservation and improvement.

3. Direct management efforts towards the protection and improvement of habitat.

APPENDIX 8

HABITAT MANAGEMENT PLAN

RELEVANT CONSTRAINTS

The multiple use recommendations in the MFP determined what was proposed in the HMP. The final MFP decisions will dictate what and how projects will be implemented. If a MFP decision differs significantly from an existing final recommendation, the HMP will be modified accordingly. The MFP is available for public review in the GCRA office in Worland, Wyoming. Examples of some MFP multiple use recommendation constraints that served as HMP guidelines and that will govern project implementation include:

Multiple Use Recommendations

WL-1.1 Reservoir Construction

1. Fishery reservoirs will be constructed on public lands in the Grass Creek R.A. only where there is a permanent dependable water supply to maintain required water levels.

2. Fishery reservoirs will be planned, designed and constructed in close cooperation with the Wyoming Game and Fish Department.

3. There must be an approved "Application for Permit to Appropriate Surface Water" filed with the State Engineer in Cheyenne prior to reservoir construction.

4. Where oil field treater water is the primary water supply there must be assurance from the oil company that they will continue to discharge water for a specified period and that a certain water quality will be maintained. (Must be covered by written agreement.)

WL-2.1 Management of Wardell Reservoir and Surrounding Area

1. The management objectives should be limited to improving wildlife habitat and recreation values and facilities only to an extent that is consistant and compatible with the primary purpose of the storage reservoirs and canals for irrigation.

2. The primary management objectives should be directed to developing and improving habitat for waterfowl and fisheries. Recreation facilities should be minimized and primarily limited to the southeast shore of Wardell Reservoir to accommodate boaters and water-skiers. Special emphasis must be placed on keeping recreation use to a level that is consistent and compatible with improving wildlife habitat values.

3. The trespass situation will be cleared through the issuance of right-of-way for existing unauthorized reservoirs and canals located on the public lands.

4. Provisions for maintaining water levels compatible with wildlife habitat and recreation requirements will be included in cooperative agreements with the water users or rights-of-way whichever is appropriate.

5. Approved applications for permits for water appropriations will be a prerequisite for any impounding or use of water for wildlife habitat or recreation purposes.

WL-2.3 Reduction of Reservoir Turbidity and Siltation

Develop specific management and improvement practices in the AMP or HMP to improve or correct the identified erosion problems.

WL-2.10 Wetland Habitat Improvement

Site specific projects for vegetation reestablishment or establishment will be identified in the appropriate activity plan AMP or HMP. Projects will be prioritized in each plan.